State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____

To: _____ Location: _____

To: _____ Location: _____

From: _____ Date: _____

Interoffice Memorandum

TO: Mr. Joel Balmat, SEC Donahue

FROM: Bruce Mitchell, BAR BM

THRU: Barry Andrews, BAR BA

DATE: April 22, 1992

SUBJ: Action Direction to be Taken in Order to Obtain a Permit Amendment to be Allowed to Treat Soils from the Chemform Site at the Rinker Materials Corporation Facility

Based on discussions with representatives of the Department (i.e., Bureau of Air Regulation, Bureau of Waste Cleanup, and Office of General Counsel), the following action shall be required in order to obtain a permit amendment to treat the contaminated soils at the Chemform Site:

- Submit a request to the Department's Bureau of Air Regulation (BAR) to treat the Chemform soil at the Rinker facility under the seal of a Florida registered P.E. The request should include, at a minimum, a description of the treatment operation, storage locations of the contaminated soils at Rinker prior to treatment, fugitive emissions prevention procedures, the maximum amount of material to be treated, the desired feed rate of the contaminated soil, any blending requirements, testing protocol (i.e., EPA MM5 for metals, etc.), and the expected time to completely treat the material. Please identify the present and active permit(s) for the source(s) that will be used to treat the contaminated soils.

- A processing fee of $250.00 is required.

- Upon receipt of this information, the BAR will issue an Intent package, which will include a Public Notice requirement of the Department's Intent. (~3 days processing time)

- The Public Notice is to be published one time only and is to run for 14 days.

- If no adverse response to the Public Notice is received (i.e., request for an Administrative Hearing, etc.), then the Department will issue the permit amendment. (~3 days after conclusion of the Public Notice)

If there are any questions, please call Bruce Mitchell at (904)488-1344.

cc: C. Fancy, BAR
J. Ruddell, DWM
P. Wong, DERM
S. Brooks, SED
K. Helton, BWC
Z. Kulakowski, BWC
T. Conrardy, BWC

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

FAX TRANSMITTAL SHEET

NAME(S): Ms. Martha Berry

DEPARTMENT/COMPANY: EPA

DATE: 9-23-92

PHONE: 404-347-3058

TOTAL NUMBER OF PAGES, INCLUDING COVER PAGE: 3

****

FROM: Bruce Mitchell

DIVISION OF AIR RESOURCES MANAGEMENT

BUREAU: of Air Regulation

OFFICE PHONE: 904-488-1344 FAX PHONE: (904)922-6979

SENDER: Same

COMMENTS: Rinker Materials Corp.

HAVE A NICE DAY!

MESSAGE CONFIRMATION

SEP-23-'92 WED 14:19

TERM ID: DIV OF AIR RES MGMT P-9999

TEL NO: 904-922-6979

NO.	DATE	ST.TIME	TOTAL TIME	ID	DEPT CODE	OK	NG
657	09-23	14:17	00°02'05	404 347 3058		03	00

Meeting Attendance Record

Project: Rinker - Chemform Soils Date: 4-17-92

Subject: Departmental Evaluation of Proposal for Treatment

Name	Affiliation / Position	Phone Number
R Bruce Mitchell	FDER/DARM/BAR	904-488-1344
Kelsey Hethcox	DER/BWC/HWCS	904-488-0190
ZOE KULAKOWSKI	FDER/BWC/TRS	904-488-0190
Michael Stewart	FDER/AIR/BAR	904-488-1344
Tom Conradv	FDER/BWC/Eng Supp.	904-488-0190
Barry Andrews	FDER/DARM/BAR	904-488-1344

BEST AVAILABLE COPY

1028

To Bruce Mitchell

Date 4/15 Time 8:54

WHILE YOU WERE OUT

M Joel Balmat

of SEC Conahue

Phone 407-331-5947

Area Code Number Extension

✓	TELEPHONED	✓	PLEASE CALL
	CALLED TO SEE YOU		WILL CALL AGAIN
	WANTS TO SEE YOU		URGENT
	RETURNED YOUR CALL		

Message

Operator

370 S. N. Lake Blvd. Suite 1038 Altamonte Springs

FAX: 407 331 9025

4-10-92
1:49 - 1:59 pm

Joe Balmat
407-331-5967
SEC Donahue

Rivkin: ~~use~~ process of chemdor in their deals.

B

File Copy

For Routing To Other Than The Addressee	
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To:	Location:
To:	Location:
From:	Date:

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: Mr. Joel Balmat, SEC Donahue FAX'd 4-22-92 BAM

FROM: Bruce Mitchell, BAR BAM

THRU: Barry Andrews, BAR BA

DATE: April 22, 1992

SUBJ: Action Direction to be Taken in Order to Obtain a Permit Amendment to be Allowed to Treat Soils from the Chemform Site at the Rinker Materials Corporation Facility

Based on discussions with representatives of the Department (i.e., Bureau of Air Regulation, Bureau of Waste Cleanup, and Office of General Counsel), the following action shall be required in order to obtain a permit amendment to treat the contaminated soils at the Chemform Site:

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If there are any questions, please call Bruce Mitchell at (904)488-1344.

cc: C. Fancy, BAR
J. Ruddell, DWM (hand delivered)
P. Wong, DERM
S. Brooks, SED
K. Helton, BWC (HD)
Z. Kulakowski, BWC (HD)
T. Conrardy, BWC (HD)

4-22-92 Astor

Florida Department of Environmental Regulatio
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-24
Lawton Chiles, Governor
Carol M. Browner, Secret

FAX TRANSMITTAL SHEET

DATE: 4-22-92

NAME(S): Mr. Joel Balmat

DEPARTMENT/COMPANY: SEC Donahue

PHONE: 407-331-0025

TOTAL NUMBER OF PAGES, INCLUDING COVER PAGE: 3

****

FROM: Bruce Mitchell

DEPARTMENT: FDER/DARM/BAR

OFFICE PHONE: 904-488-1344 FAX PHONE: (904)922-6979

SENDER: Sam

COMMENTS: Action Direction for the Chemform Site.

MESSAGE CONFIRMATION

APR-22-'92 WED 12:15

TERM ID: DIV OF AIR RES MGMT P-3333

TEL NO: 904-922-6979

NO.	DATE	ST. TIME	TOTAL TIME	ID	DEPT CODE	OK	NG
985	04-22	12:13	00'01'53	8407331 0025		03	00

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____

To: _____ Location: _____

To: _____ Location: _____

From: _____ Date: _____

Interoffice Memorandum

RECEIVED

APR 23 1992

Division of Air Resources Management

TO: Barry Andrews
Bureau of Air Regulation

FROM: Tom Conrardy, Engineering Support Section
Bureau of Waste Cleanup

DATE: April 21, 1992

SUBJECT: Chemform Site, Materials Treatment at Rinker

I have discussed the proposal to send contaminated soil from Chemform to Rinker Materials for their materials substitution program with John Ruddell. To summarize the proposal, the Chemform soil is primarily contaminated with heavy metals but there have been PCBs detected in some samples. The soil would be blended with other suitable, non-contaminated soil, processed through the kiln and ultimately incorporated into the concrete mix. This appears to be a feasible technique for immobilizing the heavy metals contaminants. Your Division had concerns of whether treatment of the soil would conflict with our policy and proposed language in Chapter 17-775 that PCB contaminated soil should not be treated at a soil thermal treatment facility.

We have no objection to this proposal provided it is recognized that this proposal is not a Chapter 17-775 activity. The soil being treated is not petroleum contaminated soil. This may be permitted under the existing air emissions permit for the facility but no implications should be made that this is being performed under the requirements and provisions of Chapter 17-775, F.A.C. It may be appropriate to define conditions related to material handling and storage in a manner consistent with the provisions of Chapter 17-775, however. Please let me know if you need any assistance in this regard. If you have any questions, please call me at 8-0190.

TC/wp

cc: John Ruddell
Kelsey Helton
Zoe Kulakowski

Bruce
Here is the
written response
we have been
working for
Barry

MORGAN, LEWIS & BOCKIUS
COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
200 SOUTH BISCAYNE BOULEVARD
MIAMI, FLORIDA 33131-2339
TELEPHONE: (305) 579-0300
FAX: (305) 579-0321

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SAN DIEGO
BRUSSELS
TOKYO

TERRY L. ZINN
DIAL DIRECT (305) 579-0386

VIA TELECOPIER March 11, 1992

Barry Andrews
Administrator of Permitting
and Standard Section
Division of Air Resources Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Use of Chemform Soils at Rinker Materials Cement Kiln

Dear Mr. Andrews:

I had a meeting with Bob Johns and Paul Lasa of DERM regarding DERM's position on Chemform soils being used by the Rinker cement kiln. Bob Johns, Paul Lasa and DERM will approve of the materials to go to the Rinker cement kiln. However, their approval is dependent upon you sending a letter to them with your conditions which we understand to be an air stack sampling test to be run for metals of concern while the soils are used in the cement kiln. All the parties have agreed to such a stack test.

I would greatly appreciate if you would issue that letter as soon as possible. To facilitate a rapid response to our request, I have attached a proposed letter.

If you should have any questions regarding this letter please call me, or Bob Johns and Pat Wong at DERM.

Sincerely yours,

Terry L. Zinn

TLZ/go

c.c. Bob Johns
Pat Wong
Joel Balmat

Q:\PUBLIC\ZINN0386\13436.1

rcd
@10:30am
3-26-92

4-9-82
spoke to Alexander? @ DERM

March 11, 1992

Robert Johns
Chief, Hazardous Waste Section
Pat Wong
Chief Air Section
Dade County DERM
Suite 1310
111 N.W. First Street
Miami, Florida 33128-1971

Re: Use of Chemform Soils at Rinker Cement Kiln

Dear Bob and Pat:

I have reviewed the analytical data submitted on the Chemform soil by Terry L. Zinn of Morgan, Lewis & Bockius. The Florida Department of Environmental Regulation approves of the use of the Chemform soils at the Rinker Materials cement kiln under the following conditions:

1. An air stack monitoring test will be conducted during the use of the Chemform soils at the Rinker Materials kiln.

2. Data from the stack testing will be submitted to both DER and DERM.

3. The stack test will test for nickel and chromium which are the metals of concern in the Chemform soils.

If you should have any questions regarding this letter, please call me.

Sincerely,

Barry Andrews

Q:\PUBLIC\ZINN0386\13440.1

MORGAN, LEWIS & BOCKIUS

PHILADELPHIA
LOS ANGELES
MIAMI
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COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
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FAX: (305) 579-0321

WASHINGTON
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SAN DIEGO
BRUSSELS
TOKYO

FAX MESSAGE

SEND TO:

(1) Name: Barry Andrews — FAX Number: (904) 922-6979

Firm: Florida DER — Telephone Number: (904) 488-1344

(2) Name: — FAX Number:

Firm: — Telephone Number:

FROM:

Name: Terry L. Zinn — Floor: 52 — Operator Sending:

Telephone Number: 579-0386 — Time Sent: — Date Sent: 2/7/92

NUMBER OF PAGES (INCLUDING COVER PAGE): 2

COMMENTS:

MORGAN, LEWIS & BOCKIUS
COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
200 SOUTH BISCAYNE BOULEVARD
MIAMI, FLORIDA 33131-2339
TELEPHONE: (305) 579-0300
FAX: (305) 579-0321

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TERRY L. ZINN
DIAL DIRECT: (305) 579-0388

February 6, 1992

VIA TELECOPIER

Barry Andrews
Administrator of Permitting
and Standard Section
Division of Air Resources Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Chemform Site Located at 1410 S.W. 8th Street, Pompano Beach, Florida 33069

Dear Mr. Andrews:

This will confirm with you my understanding from Joel Balmat that DER will allow the Chemform soils to be used in the Rinker cement kiln. As agreed, Rinker will test air emissions for chromium and nickel while using these soils.

We are working under a very short deadline. At your earliest convenience, please fax me an approval letter reflecting these terms. Please advise me who on your staff will coordinate methodology for the testing.

Thank you for your assistance and cooperation.

Sincerely yours,

Terry L. Zinn

TLZ/go

c.c. Joel Balmat
Mike Vardeman
Vivian M. Cline, Esq.
Mark Jacobs, Esq.
Peter P. Twining, Esq.

O:\PUBLIC\ZINN0386\87[illegible].1

MORGAN, LEWIS & BOCKIUS
COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
200 SOUTH BISCAYNE BOULEVARD
MIAMI, FLORIDA 33131-2339
TELEPHONE: (305) 579-0300
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TERRY L. ZINN
DIAL DIRECT (305) 579-0386

February 6, 1992

VIA TELECOPIER

Barry Andrews
Administrator of Permitting
and Standard Section
Division of Air Resources Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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TLZ/go

c.c. Joel Balmat
Mike Vardeman
Vivian M. Cline, Esq.
Mark Jacobs, Esq.
Peter P. Twining, Esq.

Q:\PUBLIC\ZINN0386\8786.1

Chemform/Rinker Substitution Program Summary Analysis

Rinker proposes a 10 percent input feed rate substitution of chemform soil in their two clinker kilns. The feed rate for each kiln is 56.2 TPH of raw materials and 6.8 TPH of coal. The maximum feed rate of chemform soil to each unit would be approximately 5.6 TPH and the total amount of soil to be treated is 551 tons. Each kiln has two precipitators for particulate control and both kilns are vented to the same stack.

The parameters given are as follows:

Stack height - 150 feet Exit diameter - 15 feet
Exit gas Temp. - 260 to 300 F
Exit gas flow rate - 112,000 acfm (1 unit)
Each precipitator loaded at 10,000 lbs/hr
Each kiln permitted to emit 32 lbs/hr of particulate
Each kiln typically emits 15 to 20 lbs/hr of particulate

Calculation and modeling results:

Parameter	Soil Conc. (mg/kg)	Emission Rate* (g/s)	Impact** 8 hr avg (ug/m3)	No Threat Level(ug/m3)
Arsenic	18	0.051	0.085	2
Barium	5.4	0.015	0.025	5
Cadmium	16	0.045	0.075	0.5
Chromium	850	2.41	4.03	5
Lead	40	0.113	0.189	1.5
Mercury	6.8	0.019	0.032	1
Nickel	2000	5.66	9.46	0.5
Selenium	<1.0	0.0025	0.004	2
Silver	4.1	0.012	0.020	0.1

* Emission rates assume that all metals going into the kilns come out the stack
** Impacts estimated using Toxic Screen Model

Comments:

The air impact is too high for nickel and is questionable for chromium. In order to lower the air impact of nickel to 0.5 (the No Threat Level), the emission rate would have to be lowered to 0.295 g/s. This is approximately a 95 percent reduction in the amount of nickel going into the kilns. Reduction would be achieved by retention of metals in the clinker and the removal metals by the precipitators.

RESPONSE: (1/15 LETTER)

MY UNDERSTANDING IS THAT RINKER IS ONLY APPROVED TO USE SOILS AT CLEAN FILL LIMITS IN THE ROCK DRYER ONCE THE PROPER MODIFICATIONS HAVE BEEN MADE. I AM NOT MODELING SOILS AS A SINGLE BATCH BUT AS A CONTINUOUS FEED AT A MAXIMUM RATE OF 10% OF TOTAL RAW MATERIAL FEED. THE CONC. OF METALS IN THE BLENDED RAW PRODUCTS DOES NOT MATTER, THE TOTAL MASS OF METALS ENTERING THE KILN REMAINS THE SAME.

MORGAN, LEWIS & BOCKIUS

PHILADELPHIA
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COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
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(2) Name: — FAX Number:

Firm: — Telephone Number:

FROM:

Name: Terry L. Zinn — Floor: 52 — Operator Sending:

Telephone Number: 579-038[illegible] — Time Sent: — Date Sent:

NUMBER OF PAGES (INCLUDING COVER PAGE): 2

COMMENTS:

Rinker Materials

Rinker Materials Corporation
1200 N.W. 137th Avenue
Miami, FL 33182

P.O. Box 650679
Miami, FL 33265-0679

Facsimile (305) 223-5403
Telephone (305) 221-7645

January 10, 1992

Morgan, Lewis & Bockius Esq.
5300 Southeast Financial Center
200 South Biscayne Blvd.
Miami, FL 33131

Attn: Mr. Terry L. Zinn

Dear Terry:

In regard to your recent inquiry concerning non hazardous soils located at the Chemform site, Rinker can incorporate these materials into our Materials Substitution Program for the production of Portland Cement once the necessary approvals have been received from both Florida Department of Environmental Regulation and Dade County Environmental Resource Management.

If you have further questions or if Rinker can be of further assistance, please give me a call.

Sincerely,

David V. Marple
Director Marketing & Sales

DM/ld

MORGAN, LEWIS & BOCKIUS

PHILADELPHIA
LOS ANGELES
MIAMI
LONDON
FRANKFURT

COUNSELORS AT LAW
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FAX: (305) 579-0321

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BRUSSELS
TOKYO

FAX MESSAGE

SEND TO:

(1) Name: Mike Hewitt — FAX Number: (904) 922-6979

Firm: Florida DER — Telephone Number: (904) 488-1344

(2) Name: — FAX Number:

Firm: — Telephone Number:

FROM:

Name: Terry L. Zinn — Floor: 52 — Operator Sending:

Telephone Number: 579-0386 — Time Sent: — Date Sent:

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COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
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TERRY L. ZINN
DIRECT DIAL: 305 379-0300

January 15, 1992

VIA TELECOPIER

Mike Hewitt
Permitting and Standard Section
Division of Air Resources Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Chemform Soils Modeling

Dear Mr. Hewitt:

I have given thought to your modeling assumptions for the Chemform soils. I understand you are modeling the soils entering the kiln on a single batch. However, Rinker blends the soils on site with other new products so that the metals levels of any mix entering the kiln does not exceed metals levels in clean fill standards. Therefore, I believe it is more realistic to model the emissions based on the clean fill standards for nickel and chrome, which would model the actual scenario for use of the soils at Rinker. I understand that Rinker has been approved to use soils containing metals at clean fill limits because it does not cause an emissions problem.

If you would like to discuss the matter please call me.

Sincerely yours,

Terry L. Zinn

TLZ/go

c.c. Mike Vardeman

01-13-92
09:53:32

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Conc. at which Nickel is equal to NTL

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.2950
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

$\frac{5.66 - .295}{5.66} \times 100 = .048$

$\therefore$ ≈95% CONTROL OF NI IS NECESSARY

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.7050	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.20 M**4/S**3; MOM. FLUX = 158.62 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.1073E-05	5	1.0	1.7	5000.0	156.5	26.5	26.0	NO
200.	.3938E-03	5	1.0	1.7	5000.0	156.5	33.7	32.3	NO
300.	.4392E-02	3	10.0	11.6	3200.0	85.9	35.2	21.8	NO
400.	.8186E-01	1	3.0	3.3	960.0	216.2	98.4	78.5	NO
500.	.3222	1	3.0	3.3	960.0	216.2	119.4	111.5	NO
600.	.5047	1	3.0	3.3	960.0	216.2	139.8	159.9	NO
700.	.4941	1	3.0	3.3	960.0	216.2	159.7	218.7	NO
800.	.5065	1	1.0	1.1	558.3	557.3	225.3	318.5	NO
900.	.6506	1	1.0	1.1	558.3	557.3	239.9	391.4	NO

1000.	.7032	1	1.0	1.1	558.3	557.3	254.8	476.8	NO
1100.	.6944	1	1.0	1.1	558.3	557.3	270.0	574.2	NO
1200.	.6634	1	1.0	1.1	558.3	557.3	285.3	683.4	NO
1300.	.6300	1	1.0	1.1	558.3	557.3	300.8	804.2	NO
1400.	.5990	1	1.0	1.1	558.3	557.3	316.4	936.6	NO
1500.	.5708	1	1.0	1.1	558.3	557.3	332.1	1080.5	NO
1600.	.5450	1	1.0	1.1	558.3	557.3	347.7	1236.0	NO
1700.	.5215	1	1.0	1.1	558.3	557.3	363.4	1403.0	NO
1800.	.4999	1	1.0	1.1	558.3	557.3	379.1	1581.6	NO
1900.	.4800	1	1.0	1.1	558.3	557.3	394.8	1771.8	NO
2000.	.4617	1	1.0	1.1	558.3	557.3	410.5	1973.6	NO
2100.	.4447	1	1.0	1.1	558.3	557.3	426.2	2187.2	NO
2200.	.4290	1	1.0	1.1	558.3	557.3	441.8	2412.6	NO
2300.	.4143	1	1.0	1.1	558.3	557.3	457.4	2649.8	NO
2400.	.4007	1	1.0	1.1	558.3	557.3	473.0	2898.8	NO
2500.	.3880	1	1.0	1.1	558.3	557.3	488.5	3159.8	NO
2600.	.3760	1	1.0	1.1	558.3	557.3	504.0	3432.7	NO
2700.	.3648	1	1.0	1.1	558.3	557.3	519.5	3717.7	NO
2800.	.3543	1	1.0	1.1	558.3	557.3	534.9	4014.7	NO
2900.	.3576	2	1.0	1.1	558.3	557.3	423.2	380.7	NO
3000.	.3606	2	1.0	1.1	558.3	557.3	434.5	393.0	NO
3500.	.3573	2	1.0	1.1	558.3	557.3	491.1	456.1	NO
4000.	.3370	2	1.0	1.1	558.3	557.3	547.2	521.1	NO
4500.	.3117	2	1.0	1.1	558.3	557.3	602.8	587.7	NO
5000.	.2874	2	1.0	1.1	558.3	557.3	657.9	655.4	NO
5500.	.2659	2	1.0	1.1	558.3	557.3	712.5	724.3	NO
6000.	.2598	3	1.0	1.2	535.5	534.5	538.4	344.4	NO
6500.	.2629	3	1.0	1.2	535.5	534.5	575.8	366.4	NO
7000.	.2621	3	1.0	1.2	535.5	534.5	612.9	388.5	NO
7500.	.2675	5	1.0	1.7	5000.0	156.5	316.4	75.3	NO
8000.	.2754	5	1.0	1.7	5000.0	156.5	335.0	77.4	NO
8500.	.2818	5	1.0	1.7	5000.0	156.5	353.4	79.4	NO
9000.	.2868	5	1.0	1.7	5000.0	156.5	371.8	81.4	NO
9500.	.2905	5	1.0	1.7	5000.0	156.5	390.0	83.3	NO
10000.	.2932	5	1.0	1.7	5000.0	156.5	408.2	85.2	NO
15000.	.2800	5	1.0	1.7	5000.0	156.5	584.2	100.7	NO
20000.	.2500	5	1.0	1.7	5000.0	156.5	753.0	113.8	NO
25000.	.2178	5	1.0	1.7	5000.0	156.5	916.2	123.0	NO
30000.	.1920	5	1.0	1.7	5000.0	156.5	1075.0	131.2	NO
40000.	.1538	5	1.0	1.7	5000.0	156.5	1382.1	145.4	NO
50000.	.1309	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	.7050	1	1.0	1.1	558.3	557.3	258.6	500.0	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** USER SPECIFIED AVERAGING TIMES ***
****

ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = .4935(þ .141)

CALCULATIONS

CHEMFORM SOILS / RINKER MATERIALS SUBSTITUTION PROGRAM

TERRY L. ZINN, MORGAN, LEWIS & BOCKIUS (305) 579-0386
MIKE VARDEMAN, RINKER (305) 221-7645

- GIVEN: STACK HEIGHT 150 ft, DIAMETER = 15 ft
  EXIT GAS TEMP 260-300°F
  EXIT GAS FLOW RATE: 112,000 ACFM (PER UNIT)
  FEED RATE: 56.2 TON/HR RAW MAT. (PER UNIT)
  6.8 TON/HR COAL (PER UNIT)
  FEED RATE OF CONTAMINATED SOIL WILL BE A MAX. OF 10% RAW MAT. FEED RATE
  TWO IDENTICAL UNITS VENT TO ONE STACK
  CONTAMINATED SOIL WILL BE FEED TO BOTH UNITS

- TOTAL METALS CONCENTRATIONS IN SOIL STOCKPILES

PARAMETER	AVG CONC (mg/Kg)	SOIL STD (mg/Kg)	NTL (8hr ug/m³)
ARSENIC	18	55	2
BARIUM	5.4	2,750	5
CADMIUM	16	55	0.5
CHROMIUM	850	275	5 (0.5)
LEAD	40	77	1.5
MERCURY	6.8	17	1
NICKEL	2,000	NA	0.5
SELENIUM	<1.0	165	2
SILVER	4.1	165	0.1

- ASSUME BOTH UNITS OPERATE AT THE MAX. RATE

- CALCULATED: STACK HEIGHT = 45.72 m

  EXIT GAS TEMP = 400 - 422 °K

$$\text{EXIT VELOCITY} = 2 \left| \frac{112{,}000\ ft^3}{min} \right| \frac{.0283\ m^3}{ft^3} \left| \frac{min}{60\ s} \right| \frac{}{\pi (2.286\ m)^2} = 6.44\ mps$$

$$\text{SOIL INPUT} = 2 \left| \frac{56.2\ ton}{HR} \right| \frac{0.10}{} \left| \frac{HR}{3600\ s} \right. = 6.24\ lb/s$$

PARAMETER OUTPUT:

$$\text{ARSENIC } \frac{6.24\ lb\ soil}{s} \left| \frac{.454\ kg}{lb} \right| \frac{18\ mg\ As}{kg\ soil\ mg} = 0.051\ g/s\ As$$

BARIUM	= 0.015 g/s	MERCURY	= 0.019 g/s
CADMIUM	= 0.045 g/s	NICKEL	= 5.66 g/s
CHROMIUM	= 2.41 g/s	SELENIUM	= 0.0025 g/s
LEAD	= 0.113 g/s	SILVER	= 0.012 g/s

	NTL ($\mu g/m^3$) 8hr avg	Max Conc ($\mu g/m^3$) 8hr avg
ARSENIC	2	0.085
BARIUM	5	0.025
CADMIUM	0.5	0.075
CHROMIUM	5	4.03
LEAD	1.5	0.189
MERCURY	1	0.032
NICKEL	0.5	9.46
SELENIUM	2	0.004
SILVER	0.1	0.020

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Arsenic

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.5100E-01
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.1218	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.1860E-06	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.6816E-04	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.7566E-03	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	.1411E-01	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	.5562E-01	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	.8718E-01	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	.8539E-01	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	.8744E-01	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	.1123	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	.1215	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	.1200	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	.1146	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	.1088	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	.1035	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	.9862E-01	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	.9417E-01	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	.9011E-01	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	.8637E-01	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	.8294E-01	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	.7977E-01	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	.7684E-01	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	.7412E-01	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	.7159E-01	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	.6924E-01	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	.6704E-01	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	.6497E-01	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	.6304E-01	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	.6123E-01	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	.6177E-01	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	.6228E-01	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	.6172E-01	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	.5822E-01	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	.5387E-01	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	.4967E-01	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	.4594E-01	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	.4486E-01	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	.4540E-01	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	.4528E-01	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	.4621E-01	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	.4758E-01	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	.4868E-01	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	.4954E-01	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	.5019E-01	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	.5066E-01	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	.4838E-01	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	.4320E-01	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	.3765E-01	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	.3318E-01	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	.2658E-01	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	.2261E-01	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	.1218	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

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**************************************
*** USER SPECIFIED AVERAGING TIMES ***
**************************************

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME =   .10962(þ .01218)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME =   .08526(þ .02436)
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME =  .04872(þ .02436)
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*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Barium

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.1500E-01
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.3582E-01	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.5471E-07	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.2005E-04	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.2225E-03	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	.4151E-02	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	.1636E-01	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	.2564E-01	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	.2512E-01	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	.2572E-01	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	.3304E-01	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	.3572E-01	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	.3529E-01	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	.3371E-01	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	.3201E-01	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	.3044E-01	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	.2901E-01	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	.2770E-01	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	.2650E-01	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	.2540E-01	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	.2439E-01	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	.2346E-01	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	.2260E-01	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	.2180E-01	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	.2106E-01	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	.2036E-01	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	.1972E-01	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	.1911E-01	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	.1854E-01	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	.1801E-01	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	.1817E-01	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	.1832E-01	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	.1815E-01	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	.1712E-01	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	.1584E-01	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	.1461E-01	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	.1351E-01	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	.1320E-01	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	.1335E-01	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	.1332E-01	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	.1359E-01	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	.1399E-01	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	.1432E-01	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	.1457E-01	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	.1476E-01	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	.1490E-01	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	.1423E-01	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	.1271E-01	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	.1107E-01	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	.9758E-02	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	.7817E-02	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	.6651E-02	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	.3582E-01	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** USER SPECIFIED AVERAGING TIMES ***
****

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME = .032238(þ .003582)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = .025074(þ .007164)
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME = .014328(þ .007164)

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Cadmium

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.4500E-01
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.1075	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.1641E-06	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.6014E-04	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.6676E-03	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	.1245E-01	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	.4908E-01	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	.7692E-01	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	.7535E-01	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	.7715E-01	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	.9913E-01	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	.1072	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	.1059	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	.1011	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	.9604E-01	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	.9132E-01	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	.8702E-01	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	.8309E-01	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	.7951E-01	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	.7621E-01	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	.7318E-01	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	.7039E-01	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	.6780E-01	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	.6540E-01	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	.6317E-01	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	.6109E-01	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	.5915E-01	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	.5733E-01	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	.5563E-01	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	.5402E-01	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	.5450E-01	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	.5495E-01	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	.5446E-01	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	.5137E-01	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	.4753E-01	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	.4382E-01	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	.4054E-01	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	.3959E-01	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	.4006E-01	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	.3995E-01	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	.4077E-01	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	.4198E-01	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	.4296E-01	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	.4371E-01	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	.4429E-01	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	.4470E-01	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	.4269E-01	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	.3812E-01	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	.3322E-01	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	.2927E-01	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	.2345E-01	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	.1995E-01	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	.1075	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** USER SPECIFIED AVERAGING TIMES ***
****

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME = .09675(þ .01075)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = .07525(þ .0215)
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME = .043(þ .0215)

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Chromium

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	2.410
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	5.755	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.8790E-05	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.3221E-02	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.3575E-01	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	.6669	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	2.628	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	4.120	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	4.035	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	4.132	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	5.309	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	5.740	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	5.669	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	5.416	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	5.143	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	4.891	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	4.660	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	4.450	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	4.258	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	4.082	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	3.919	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	3.770	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	3.631	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	3.503	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	3.383	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	3.272	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	3.168	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	3.070	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	2.979	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	2.893	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	2.919	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	2.943	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	2.917	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	2.751	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	2.545	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	2.347	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	2.171	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	2.120	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	2.146	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	2.140	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	2.184	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	2.248	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	2.301	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	2.341	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	2.372	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	2.394	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	2.286	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	2.041	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	1.779	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	1.568	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	1.256	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	1.069	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	5.755	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

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**************************************
*** USER SPECIFIED AVERAGING TIMES ***
**************************************

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME =  5.1795(þ .5755)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME =  4.0285(þ 1.151)
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME =  2.302(þ 1.151)
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*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Lead

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.1130
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.2698	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.4121E-06	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.1510E-03	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.1676E-02	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	.3127E-01	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	.1232	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	.1932	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	.1892	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	.1937	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	.2489	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	.2691	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	.2658	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	.2540	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	.2412	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	.2293	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	.2185	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	.2087	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	.1996	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	.1914	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	.1838	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	.1768	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	.1703	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	.1642	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	.1586	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	.1534	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	.1485	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	.1440	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	.1397	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	.1357	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	.1369	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	.1380	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	.1368	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	.1290	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	.1193	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	.1100	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	.1018	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	.9940E-01	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	.1006	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	.1003	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	.1024	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	.1054	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	.1079	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	.1098	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	.1112	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	.1122	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	.1072	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	.9571E-01	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	.8341E-01	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	.7351E-01	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	.5889E-01	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	.5010E-01	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	.2698	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

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**************************************
*** USER SPECIFIED AVERAGING TIMES ***
**************************************

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME =   .24282(þ .02698)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME =   .18886(þ .05396)
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME =  .10792(þ .05396)
```

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Mercury

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.1900E-01
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.4537E-01	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.6930E-07	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.2539E-04	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.2819E-03	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	.5258E-02	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	.2072E-01	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	.3248E-01	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	.3181E-01	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	.3257E-01	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	.4186E-01	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	.4525E-01	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	.4469E-01	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	.4270E-01	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	.4055E-01	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	.3856E-01	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	.3674E-01	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	.3508E-01	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	.3357E-01	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	.3218E-01	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	.3090E-01	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	.2972E-01	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	.2863E-01	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	.2761E-01	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	.2667E-01	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	.2579E-01	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	.2497E-01	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	.2421E-01	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	.2349E-01	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	.2281E-01	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	.2301E-01	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	.2320E-01	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	.2299E-01	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	.2169E-01	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	.2007E-01	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	.1850E-01	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	.1712E-01	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	.1671E-01	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	.1692E-01	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	.1687E-01	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	.1721E-01	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	.1773E-01	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	.1814E-01	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	.1846E-01	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	.1870E-01	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	.1887E-01	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	.1803E-01	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	.1609E-01	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	.1403E-01	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	.1236E-01	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	.9901E-02	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	.8425E-02	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	.4537E-01	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

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**************************************
*** USER SPECIFIED AVERAGING TIMES ***
**************************************

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME =   .040833(þ .004537)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME =  .031759(þ 9.074001E-0
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME =  .018148(þ 9.074001E-
```

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Nickel

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	5.660
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	13.52	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.2064E-04	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.7564E-02	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.8397E-01	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	1.566	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	6.173	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	9.675	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	9.477	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	9.704	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	12.47	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	13.48	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	13.31	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	12.72	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	12.08	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	11.49	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	10.94	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	10.45	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	10.00	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	9.586	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	9.205	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	8.853	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	8.528	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	8.226	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	7.945	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	7.684	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	7.440	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	7.211	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	6.996	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	6.795	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	6.855	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	6.912	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	6.850	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	6.461	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	5.978	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	5.512	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	5.099	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	4.979	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	5.039	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	5.025	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	5.128	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	5.281	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	5.403	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	5.498	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	5.570	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	5.622	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	5.370	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	4.794	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	4.178	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	3.682	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	2.950	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	2.510	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	13.52	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** USER SPECIFIED AVERAGING TIMES ***
****

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME = 12.168(þ 1.352)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = 9.464(þ 2.704)
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME = 5.408(þ 2.704)

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Selenium

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.2500E-02
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.5970E-02	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.9118E-08	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.3341E-05	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.3709E-04	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	.6918E-03	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	.2727E-02	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	.4274E-02	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	.4186E-02	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	.4286E-02	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	.5507E-02	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	.5954E-02	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	.5881E-02	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	.5618E-02	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	.5335E-02	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	.5073E-02	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	.4834E-02	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	.4616E-02	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	.4417E-02	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	.4234E-02	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	.4066E-02	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	.3910E-02	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	.3767E-02	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	.3633E-02	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	.3509E-02	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	.3394E-02	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	.3286E-02	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	.3185E-02	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	.3090E-02	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	.3001E-02	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	.3028E-02	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	.3053E-02	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	.3026E-02	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	.2854E-02	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	.2640E-02	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	.2435E-02	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	.2252E-02	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	.2199E-02	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	.2226E-02	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	.2220E-02	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	.2265E-02	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	.2332E-02	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	.2386E-02	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	.2429E-02	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	.2460E-02	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	.2483E-02	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	.2372E-02	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	.2118E-02	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	.1845E-02	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	.1626E-02	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	.1303E-02	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	.1109E-02	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	.5970E-02	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** USER SPECIFIED AVERAGING TIMES ***
****

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME = .005373(þ .000597)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = .004179(þ .001194)
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME = .002388(þ .001194)

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

Chemform/Rinker - Silver

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.1200E-01
STACK HEIGHT (M)	=	45.72
STK INSIDE DIAM (M)	=	4.57
STK EXIT VELOCITY (M/S)	=	6.4400
STK GAS EXIT TEMP (K)	=	400.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.2866E-01	1026.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

BUOY. FLUX = 88.28 M**4/S**3; MOM. FLUX = 158.76 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	0	.0	.0	.0	.0	.0	.0	
100.	.4377E-07	5	1.0	1.7	5000.0	156.6	26.5	26.0	NO
200.	.1604E-04	5	1.0	1.7	5000.0	156.6	33.7	32.3	NO
300.	.1780E-03	3	10.0	11.6	3200.0	86.0	35.2	21.8	NO
400.	.3321E-02	1	3.0	3.3	960.0	216.3	98.4	78.5	NO
500.	.1309E-01	1	3.0	3.3	960.0	216.3	119.4	111.5	NO
600.	.2051E-01	1	3.0	3.3	960.0	216.3	139.8	159.9	NO
700.	.2009E-01	1	3.0	3.3	960.0	216.3	159.7	218.7	NO
800.	.2057E-01	1	1.0	1.1	558.6	557.6	225.3	318.6	NO
900.	.2643E-01	1	1.0	1.1	558.6	557.6	239.9	391.5	NO

1000.	.2858E-01	1	1.0	1.1	558.6	557.6	254.8	476.8	NO
1100.	.2823E-01	1	1.0	1.1	558.6	557.6	270.0	574.2	NO
1200.	.2697E-01	1	1.0	1.1	558.6	557.6	285.4	683.4	NO
1300.	.2561E-01	1	1.0	1.1	558.6	557.6	300.9	804.2	NO
1400.	.2435E-01	1	1.0	1.1	558.6	557.6	316.4	936.6	NO
1500.	.2320E-01	1	1.0	1.1	558.6	557.6	332.1	1080.5	NO
1600.	.2216E-01	1	1.0	1.1	558.6	557.6	347.8	1236.0	NO
1700.	.2120E-01	1	1.0	1.1	558.6	557.6	363.5	1403.0	NO
1800.	.2032E-01	1	1.0	1.1	558.6	557.6	379.2	1581.6	NO
1900.	.1952E-01	1	1.0	1.1	558.6	557.6	394.9	1771.8	NO
2000.	.1877E-01	1	1.0	1.1	558.6	557.6	410.5	1973.6	NO
2100.	.1808E-01	1	1.0	1.1	558.6	557.6	426.2	2187.2	NO
2200.	.1744E-01	1	1.0	1.1	558.6	557.6	441.8	2412.6	NO
2300.	.1685E-01	1	1.0	1.1	558.6	557.6	457.4	2649.8	NO
2400.	.1629E-01	1	1.0	1.1	558.6	557.6	473.0	2898.8	NO
2500.	.1577E-01	1	1.0	1.1	558.6	557.6	488.6	3159.8	NO
2600.	.1529E-01	1	1.0	1.1	558.6	557.6	504.0	3432.7	NO
2700.	.1483E-01	1	1.0	1.1	558.6	557.6	519.5	3717.7	NO
2800.	.1441E-01	1	1.0	1.1	558.6	557.6	534.9	4014.7	NO
2900.	.1453E-01	2	1.0	1.1	558.6	557.6	423.2	380.7	NO
3000.	.1465E-01	2	1.0	1.1	558.6	557.6	434.6	393.0	NO
3500.	.1452E-01	2	1.0	1.1	558.6	557.6	491.1	456.1	NO
4000.	.1370E-01	2	1.0	1.1	558.6	557.6	547.2	521.1	NO
4500.	.1267E-01	2	1.0	1.1	558.6	557.6	602.8	587.7	NO
5000.	.1169E-01	2	1.0	1.1	558.6	557.6	657.9	655.5	NO
5500.	.1081E-01	2	1.0	1.1	558.6	557.6	712.5	724.3	NO
6000.	.1056E-01	3	1.0	1.2	535.7	534.7	538.4	344.4	NO
6500.	.1068E-01	3	1.0	1.2	535.7	534.7	575.8	366.4	NO
7000.	.1065E-01	3	1.0	1.2	535.7	534.7	612.9	388.5	NO
7500.	.1087E-01	5	1.0	1.7	5000.0	156.6	316.4	75.4	NO
8000.	.1120E-01	5	1.0	1.7	5000.0	156.6	335.0	77.4	NO
8500.	.1145E-01	5	1.0	1.7	5000.0	156.6	353.4	79.4	NO
9000.	.1166E-01	5	1.0	1.7	5000.0	156.6	371.8	81.4	NO
9500.	.1181E-01	5	1.0	1.7	5000.0	156.6	390.0	83.3	NO
10000.	.1192E-01	5	1.0	1.7	5000.0	156.6	408.2	85.2	NO
15000.	.1138E-01	5	1.0	1.7	5000.0	156.6	584.2	100.7	NO
20000.	.1016E-01	5	1.0	1.7	5000.0	156.6	753.0	113.8	NO
25000.	.8858E-02	5	1.0	1.7	5000.0	156.6	916.2	123.0	NO
30000.	.7806E-02	5	1.0	1.7	5000.0	156.6	1075.0	131.2	NO
40000.	.6253E-02	5	1.0	1.7	5000.0	156.6	1382.1	145.4	NO
50000.	.5321E-02	6	1.0	2.3	5000.0	128.8	1117.7	82.7	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1026.	.2866E-01	1	1.0	1.1	558.6	557.6	258.6	500.1	NO

DIST = DISTANCE FROM THE SOURCE
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DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
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DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** USER SPECIFIED AVERAGING TIMES ***
****

ESTIMATED MAXIMUM CONCENTRATION FOR 3 HR AVERAGING TIME = .025794(þ .002866)
ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = .020062(þ .005732)
ESTIMATED MAXIMUM CONCENTRATION FOR 24 HR AVERAGING TIME = .011464(þ .005732)

TERRY L. ZINN (305) 579-0386, MORGAN, LEWIS & BOCKIUS

~~DAVE MARPLE~~ (305) 221-7695, RINKER

MIKE VANDERMAN

NEED: STACK HEIGHT 150'

STACK DIAMETER 15'

GAS TEMP. ~~350°F~~ 260-300°F

GAS FLOW RATE

GAS VELOCITY

FEED RATE OF D.R.T. ~ 10%

TOTAL FEED RATE OF RAW MATERIALS

TON/HR 56.2 feed rate (everything except coal)

6.8 T/hr coal

↑ Soil will be no more than 10% (6.3 T/hr)

↑ THIS IS FOR ON KILN. THERE ARE TWO KILNS & ONE STACK SO DOUBLE THE NUMBER

112,000 ACFM FOR ONE KILN

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location)

1. BARRY
2.
3.
4.

Remarks:

THIS IS THE SUMMARY & ALL SUPPORT MATERIAL CONCERNING CHEMFORM / RINKER SOIL SUBSTITUTION PROPOSAL.

I RECOMMEND WE REQUIRE TESTING FOR METALS

From: MIKE

Date: 1/13

Phone:

MORGAN, LEWIS & BOCKIUS
COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
200 SOUTH BISCAYNE BOULEVARD
MIAMI, FLORIDA 33131-2339
TELEPHONE: (305) 579-0300
FAX: (305) 579-0321

PHILADELPHIA
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WASHINGTON
NEW YORK
HARRISBURG
SAN DIEGO
BRUSSELS
TOKYO

TERRY L. ZINN
DIAL DIRECT (305) 579-0386

January 7, 1992

VIA TELECOPIER

Barry Andrews
Administrator of Permitting
and Standard Section
Division of Air Resources Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Chemform Soils/My Letter Dated December 23, 1991

Dear Mr. Andrews:

I sent you a letter on December 23, 1991 regarding the use of soils from the Chemform site in Broward County in the Rinker Materials Corporation Substitution Program. As I explained in the letter, your evaluation of the request is extremely important. I have tried to reach you by phone numerous times and I missed your call on January 2, 1992. DER has determined the soils are not hazardous (copy of letter attached).

We are working under a very tight time constraint from the U.S. EPA and must take action by January 10, 1992. By using the Rinker Materials process, we can save approximately $70,000 and avoid needlessly using hazardous waste landfill space for non-hazardous materials. I would appreciate it if you could call me with, or send me by facsimile copier, your evaluation of our request to send the Chemform soils to Rinker Materials

Corporation Materials Substitution Program.

I will call you today to follow up on your evaluation of our request since it is critical to timely removal of the soils.

Sincerely yours,

Terry L. Zinn

TLZ/go
Enc.

c.c. Mike Harley

Florida Department of Environmental Regulation

Southeast District • 1900 S. Congress Ave., Suite A • West Palm Beach, Florida 33406

Lawton Chiles, Governor

Carol M. Browner, Secretary

DEC 3 1 1991

Mr. Terry L. Zinn, Esq.
Morgan, Lewis & Bockius
5300 Southeast Financial Center
200 South Biscayne Boulevard
Miami, Florida 33131-2339

Re: Regulatory status of contaminated soils excavated from Chemform Site

Dear Mr. Zinn:

The Hazardous Waste Section has reviewed your submittals of October 25 and November 21, 1991, as well as the additional information submitted December 13, 1991. Based upon this information, we concur with your assessment that these soils are not RCRA hazardous wastes as identified in the 40 Code of Federal Regulations (CFR) Part 261 either by characteristic (Subpart C) or by listing (Subpart D).

This determination is based solely upon available information and only pertains to the approximately 551 tons of soil that have been excavated from around the Chemform building. Should new information become available or additional soils be excavated, this determination may not be valid.

Should you have any further questions, please contact Robert Kukleski at (407) 433-2650.

Sincerely,

Alexander Padva, Ph.D.
Waste Programs Administrator

AP:rk:gml/980.15

cc: Art Smith, U.S. Environmental Protection Agency, Atlanta
Barry Andrews, DER/Tallahassee
Kelsey Helton, DER/Tallahassee
Zoe Kulakowski, DER/Tallahassee
Bob Johns, Metro-Dade Environmental Resources Management

Florida Department of Environmental Regulation

Southeast District • 1900 S. Congress Ave., Suite A • West Palm Beach, Florida 33406

Lawton Chiles, Governor — Carol M. Browner, Secretary

DEC 3 1 1991

Mr. Terry L. Zinn, Esq.
Morgan, Lewis & Bockius
5300 Southeast Financial Center
200 South Biscayne Boulevard
Miami, Florida 33131-2339

Re: Regulatory status of contaminated soils excavated from Chemform Site

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This determination is based solely upon available information and only pertains to the approximately 551 tons of soil that have been excavated from around the Chemform building. Should new information become available or additional soils be excavated, this determination may not be valid.

Should you have any further questions, please contact Robert Kukleski at (407) 433-2650.

Sincerely,

(for)

Alexander Padva, Ph.D.
Waste Programs Administrator

AP:rk:gml/980.15

cc: Art Smith, U.S. Environmental Protection Agency, Atlanta
Barry Andrews, DER/Tallahassee
Kelsey Helton, DER/Tallahassee
Zoe Kulakowski, DER/Tallahassee
Bob Johns, Metro-Dade Environmental Resources Management

MORGAN, LEWIS & BOCKIUS

PHILADELPHIA
LOS ANGELES
MIAMI
LONDON
FRANKFURT

COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
200 SOUTH BISCAYNE BOULEVARD
MIAMI, FLORIDA 33131-2339
TELEPHONE: (305) 579-0300
FAX: (305) 579-0321

WASHINGTON
NEW YORK
HARRISBURG
SAN DIEGO
BRUSSELS
TOKYO

FAX MESSAGE

SEND TO:

(1) Name: Barry Andrews — FAX Number: (904) 922-6979

Firm: Florida DER — Telephone Number: (904) 488-1344

(2) Name: Mike Harley — FAX Number: same

Firm: Florida DER — Telephone Number: same

FROM:

Name: Terry L. Zinn — Floor: 52 — Operator Sending:

Telephone Number: 579-0386 — Time Sent: — Date Sent:

NUMBER OF PAGES (INCLUDING COVER PAGE): 4

COMMENTS:

MORGAN, LEWIS & BOCKIUS
COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
200 SOUTH BISCAYNE BOULEVARD
MIAMI, FLORIDA 33131-2339
TELEPHONE: (305) 579-0300
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BRUSSELS
TOKYO

TERRY L. ZINN
DIAL DIRECT (305) 579-0386

December 23, 1991

VIA FEDERAL EXPRESS

Barry Andrews
Administrator of Permitting
and Standard Section
Division of Air Resources Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Use of Chemform Soils in the Rinker Materials Substitution Program

Dear Mr. Andrews:

I am writing you at the suggestion of Mr. Mike Vardeman of Rinker Materials Corporation. I understand Mike Vardeman spoke to you about the recent request we made to Dr. Padva on October 25, 1991 to send soils from the Chemform Superfund site to the Rinker Materials Substitution Program at the Rinker Materials Cement Kiln in Dade County, Florida. Apparently, the information transmitted to you became garbled and this letter is intended to clarify the information and our request.

The Chemform site is a Superfund site which is undergoing a removal action as well as a remedial investigation and feasibility study. Pursuant to the removal action, 424 cubic yards or approximately 551 tons of soil have been excavated from around the Chemform building. The material is not a hazardous waste because it neither exhibits any characteristics nor is it a listed waste. The soils were removed from the Chemform site because they contain elevated levels of total chromium and nickel. I have enclosed, for your information, two reports by Westinghouse Environmental and Geotechnical Services, Inc., the consultant for the Chemform site. Westinghouse has conducted extensive testing and analysis on the soils located at the site as well as the soil piles. The first report I have enclosed is the technical memorandum regarding volatile organic analysis of the surface soils and the second one is a technical memorandum regarding soil stock pile analysis. The pertinent information

regarding the analysis is found in Table 4-2 of the Technical Memorandum Soil Stock Pile Analysis, which also includes information regarding the volume of soil contained in each soil pile. Further analysis, which is attached, is included in a letter sent to Dr. Padva on November 21, 1991.

Rinker Materials has assured us that the small amount of soil, some 551 tons, will be used up in the cement manufacturing process within one week. The material, according to Mike Vardeman, will be fed in sufficiently low rates into the cement manufacturing process so that no permit conditions applicable to the cement kiln will be violated. We are requesting that you approve use of Chemform soil piles in the material substitution program at the Rinker Material Cement Kiln in Dade County, Florida.

We would appreciate it if you could respond by facsimile copier to us because the U.S. EPA has placed limited time on us to obtain approval for use of these materials at the Rinker Materials Cement Kiln in Dade County, Florida.

If you should have any questions regarding the data or this letter, please feel free to give me a call at the number listed above. In addition, my fax number is (305) 579-0321. Your attention to this matter is greatly appreciated.

Sincerely yours,

Terry L. Zinn

Terry L. Zinn

TLZ/go
Enc.

c.c. Dr. Alexander Padva, DER - West Palm Beach
Mike Vardeman, Rinker Materials
Kelsey Helton, DER - Tallahassee

Dave Murphy

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

November 26, 1991

Mr. Terry L. Zinn
Morgan, Lewis & Bockius
200 South Biscayne Boulevard
Miami, Florida 33131-2339

Dear Mr. Zinn:

In your letter of August 31, 1990, you stated that Rinker believes that its materials substitution program qualifies as recycling and, therefore, is exempt from RCRA's permitting program. The letter requested an exemption for RCRA contaminated soils (toxicity characteristic only) used by Rinker.

As stated in 40 CFR 262.2(e)(1), materials are not solid wastes when they can be shown to be recycled by being used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed. To distinguish any sham recycling situations, the preamble to 50 FR 614 indicates some of those situations which would be regarded as shams. These situations include:

a. Where a secondary material is ineffective or only marginally effective for the claimed use;

b. When secondary materials are used in excess of an amount necessary for operating a process;

c. When the secondary material is not as effective as what it is replacing;

d. Absence of records regarding recycling transaction;

e. Not handling the secondary materials in a manner consistent with their use as raw materials or commercial product substitutes.

In your letter, you refer to the wastes only as contaminated soils, which reduces its (Rinker's) need for sand and limestone. Without additional information describing use of ingredients in the production process, composition of the substituted materials and effectiveness of the substituted materials as ingredients, your request cannot be evaluated.

I am enclosing an EPA memorandum dated April 26, 1989, which includes an attachment listing criteria that should be considered in evaluating recycling schemes. New regulatory requirements for boilers and industrial furnaces promulgated by EPA on February 21, 1991, provide additional guidance on use of hazardous waste solely as an ingredient. Boilers and industrial furnaces subject to the new requirements will be regulated by EPA until the requirements are adopted by the state and authorization is received from EPA.

The department's hazardous waste and air permitting personnel met with Mr. Michael Vardeman and other representatives from Rinker on May 1, 1991, to discuss burning of used oil and changes to the facility's air permit due to thermal treatment of soils regulated under 17-775, Florida Administrative Code. The air permit would require additional modification if Rinker induces materials in the manufacturing process not covered in the current or revised air permit. A hazardous waste permit may also be necessary if hazardous wastes are stored on-site. After receipt of state authorization, any applicable boiler and industrial furnace requirements must be included in a hazardous waste permit.

If you have any questions concerning the above comments, please call me or Doug Outlaw of my staff at 904/488-0300.

Sincerely,

Satish Kastury
Environmental Administrator

SK/DO/rz

Enclosure

cc: James Kutzman, EPA/Region IV
Bob Kukleski, DER/West Palm Beach

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

cc WES
WCS
STATES
ORC
ESD

G 301

APR 26 1989

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: F006 Recycling

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste (OS-300)

TO: Hazardous Waste Management Division Directors
Regions I-X

It has come to the attention of EPA Headquarters that many of the Regions and authorized States are being requested to make determinations on the regulatory status of various recycling schemes for F006 electroplating sludges. In particular, companies have claimed that F006 waste is being recycled by being used as: (1) an ingredient in the manufacture of aggregate, (2) an ingredient in the manufacture of cement, and (3) feedstock for a metals recovery smelter. The same company may make such requests of more than one Region and/or State. Given the complexities of the regulations governing recycling vs. treatment and the definition of solid waste, and the possible ramifications of determinations made in one Region affecting another Region's determination, it is extremely important that such determinations are consistent and, where possible, coordinated.

Two issues are presented. The first issue is whether these activities are legitimate recycling, or rather just some form of treatment called "recycling" in an attempt to evade regulation. Second, assuming the activity is not sham recycling, the issue is whether the activity is a type of recycling that is subject to regulation under sections 261.2 and 261.6 or is it excluded from our authority.

With respect to the issue of whether the activity is sham recycling, this question involves assessing the intent of the owner or operator by evaluating circumstantial evidence, always

a difficult task. Basically, the determination rests on whether the secondary material is "commodity-like." The main environmental considerations are (1) whether the secondary material truly has value as a raw material/product (i.e., is it likely to be abandoned or mismanaged prior to reclamation rather than being reclaimed?) and (2) whether the recycling process (including ancillary storage) is likely to release hazardous constituents (or otherwise pose risks to human health and the environment) that are different from or greater than the processing of an analogous raw material/product. The attachment to this memorandum sets out relevant factors in more detail.

If the activity is not a sham, then the question is whether it is regulated. If F006 waste is used as an ingredient to produce aggregate, then such aggregate would remain a solid waste if used in a manner constituting disposal (e.g., road-base material) under sections 261.2(c)(1) and 261.2(e)(2)(i) or if it is accumulated speculatively under section 261.2(e)(2)(iii). Likewise, the F006 "ingredient" is subject to regulation from the point of generation to the point of recycling. The aggregate product is, however, entitled to the exemption under 40 CFR 266.20(b), as amended by the August 17, 1988, Land Disposal Restrictions for First Third Scheduled Wastes final rule (see 53 FR 31197 for further discussion). However, if the aggregate is not used on the land, then the materials used to produce it would not be solid wastes at all, and therefore neither those materials nor the aggregate would be regulated (see section 261.2(e)(1)(i)).

Likewise, cement manufacturing using F006 waste as an ingredient would yield a product that remains a solid waste if it is used in a manner constituting disposal, also subject to section 266.20(b). There is an additional question of whether the cement kiln dust remains subject to the Bevill exclusion. In order for the cement kiln dust to remain excluded from regulation, the owner or operator must demonstrate that the use of F006 waste has not significantly affected the character of the cement kiln dust (e.g., demonstrate that the use of F006 waste has not significantly increased the levels of Appendix VIII constituents in the cement kiln dust leachate). [NOTE: This issue will be addressed more fully in the upcoming supplemental proposal of the Boiler and Industrial Furnace rule, which is pending Federal Register publication.]

For F006 waste used as a feedstock in a metals recovery smelter, the Agency views this as a recovery process rather than use as an ingredient in an industrial process and, therefore, considers this to be a form of treatment that is not currently regulated (see sections 261.2(c) and 261.6(c)(1)). Furthermore, because this is a recovery process rather than a production process, the F006 waste remains a hazardous waste (and must be

managed as such prior to introduction to the process), and the slag from this process would normally be considered a "derived from" F006 waste. However, for primary smelters, the slag may be considered subject to the Bevill exclusion provided that the owner or operator can demonstrate that the use of F006 waste has not significantly affected the hazardous constituent content of the slag (i.e., make a demonstration similar to the one discussed above for the cement kiln dust). [NOTE: In the supplemental proposal of the Boiler and Industrial Furnace rule noted above, the Agency will be proposing a definition of "indigenous waste" based on a comparison of the constituents found in the waste to the constituents found in an analogous raw material. Should the F006 waste meet the definition of an "indigenous waste," the waste would cease to be a waste when introduced to the process and the slag would not be derived from a hazardous waste.]

Also, you should be aware that OSW is currently reevaluating the regulations concerning recycling activities, in conjunction with finalizing the January 8, 1988 proposal to amend the Definition of Solid Waste. While any major changes may depend on RCRA reauthorization, we are considering regulatory amendments or changes in regulatory interpretations that will encourage on-site recycling, while ensuring the protection of human health and the environment.

Headquarters is able to serve as a clearinghouse to help coordinate determinations on whether a specific case is "recycling" or "treatment" and will provide additional guidance and information, as requested. Ultimately, however, these determinations are made by the Regions and authorized States. Attached to this memorandum is a list of criteria that should be considered in evaluating the recycling scheme. Should you receive a request for such a determination, or should you have questions regarding the criteria used to evaluate a specific case, please contact Mitch Kidwell, of my staff, at FTS 475-8551.

Attachment

CRITERIA FOR EVALUATING WHETHER A WASTE IS BEING RECYCLED

The difference between recycling and treatment is sometimes difficult to distinguish. In some cases, one is trying to interpret intent from circumstantial evidence showing mixed motivation, always a difficult proposition. The potential for abuse is such that great care must be used when making a determination that a particular recycling activity is to go unregulated (i.e., it is one of those activities which is beyond the scope of our jurisdiction). In certain cases, there may be few clear-cut answers to the question of whether a specific activity is this type of excluded recycling (and, by extension, that a secondary material is not a waste, but rather a raw material or effective substitute); however, the following list of criteria may be useful in focusing the consideration of a specific activity. Here too, there may be no clear-cut answers but, taken as a whole, the answers to these questions should help draw the distinction between recycling and sham recycling or treatment.

(1) Is the secondary material similar to an analogous raw material or product?

- Does it contain Appendix VIII constituents not found in the analogous raw material/product (or at higher levels)?
- Does it exhibit hazardous characteristics that the analogous raw material/product would not?
- Does it contain levels of recoverable material similar to the analogous raw material/product?
- Is much more of the secondary material used as compared with the analogous raw material/product it replaces? Is only a nominal amount of it used?
- Is the seondary material as effective as the raw material or product it replaces?

(2) What degree of processing is required to produce a finished product?

- Can the secondary material be fed directly into process (i.e., direct use) or is reclamation (or pretreatment) required?
- How much value does final reclamation add?

cc: listing for SW/HW

Donna Wilkinson - EPA Superfund
Art Smith - EPA Emergency

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

November 26, 1991

Mr. Terry L. Zinn
Morgan, Lewis & Bockius
200 South Biscayne Boulevard
Miami, Florida 33131-2339

Dear Mr. Zinn:

In your letter of August 31, 1990, you stated that Rinker believes that its materials substitution program qualifies as recycling and, therefore, is exempt from RCRA's permitting program. The letter requested an exemption for RCRA contaminated soils (toxicity characteristic only) used by Rinker.

As stated in 40 CFR 262.2(e)(1), materials are not solid wastes when they can be shown to be recycled by being used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed. To distinguish any sham recycling situations, the preamble to 50 FR 614 indicates some of those situations which would be regarded as shams. These situations include:

a. Where a secondary material is ineffective or only marginally effective for the claimed use;

b. When secondary materials are used in excess of an amount necessary for operating a process;

c. When the secondary material is not as effective as what it is replacing;

d. Absence of records regarding recycling transaction;

e. Not handling the secondary materials in a manner consistent with their use as raw materials or commercial product substitutes.

In your letter, you refer to the wastes only as contaminated soils, which reduces its (Rinker's) need for sand and limestone. Without additional information describing use of ingredients in the production process, composition of the substituted materials and effectiveness of the substituted materials as ingredients, your request cannot be evaluated.

I am enclosing an EPA memorandum dated April 26, 1989, which includes an attachment listing criteria that should be considered in evaluating recycling schemes. New regulatory requirements for boilers and industrial furnaces promulgated by EPA on February 21, 1991, provide additional guidance on use of hazardous waste solely as an ingredient. Boilers and industrial furnaces subject to the new requirements will be regulated by EPA until the requirements are adopted by the state and authorization is received from EPA.

The department's hazardous waste and air permitting personnel met with Mr. Michael Vardeman and other representatives from Rinker on May 1, 1991, to discuss burning of used oil and changes to the facility's air permit due to thermal treatment of soils regulated under 17-775, Florida Administrative Code. The air permit would require additional modification if Rinker induces materials in the manufacturing process not covered in the current or revised air permit. A hazardous waste permit may also be necessary if hazardous wastes are stored on-site. After receipt of state authorization, any applicable boiler and industrial furnace requirements must be included in a hazardous waste permit.

If you have any questions concerning the above comments, please call me or Doug Outlaw of my staff at 904/488-0300.

Sincerely,

Satish Kastury
Environmental Administrator

SK/DO/rz

Enclosure

cc: James Kutzman, EPA/Region IV
Bob Kukleski, DER/West Palm Beach

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

cc WES
WCS
STATES
ORC
ESD

G 301

APR 26 1989

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: F006 Recycling

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste (OS-300)

TO: Hazardous Waste Management Division Directors
Regions I-X

It has come to the attention of EPA Headquarters that many of the Regions and authorized States are being requested to make determinations on the regulatory status of various recycling schemes for F006 electroplating sludges. In particular, companies have claimed that F006 waste is being recycled by being used as: (1) an ingredient in the manufacture of aggregate, (2) an ingredient in the manufacture of cement, and (3) feedstock for a metals recovery smelter. The same company may make such requests of more than one Region and/or State. Given the complexities of the regulations governing recycling vs. treatment and the definition of solid waste, and the possible ramifications of determinations made in one Region affecting another Region's determination, it is extremely important that such determinations are consistent and, where possible, coordinated.

Two issues are presented. The first issue is whether these activities are legitimate recycling, or rather just some form of treatment called "recycling" in an attempt to evade regulation. Second, assuming the activity is not sham recycling, the issue is whether the activity is a type of recycling that is subject to regulation under sections 261.2 and 261.6 or is it excluded from our authority.

With respect to the issue of whether the activity is sham recycling, this question involves assessing the intent of the owner or operator by evaluating circumstantial evidence, always

a difficult task. Basically, the determination rests on whether the secondary material is "commodity-like." The main environmental considerations are (1) whether the secondary material truly has value as a raw material/product (i.e., is it likely to be abandoned or mismanaged prior to reclamation rather than being reclaimed?) and (2) whether the recycling process (including ancillary storage) is likely to release hazardous constituents (or otherwise pose risks to human health and the environment) that are different from or greater than the processing of an analogous raw material/product. The attachment to this memorandum sets out relevant factors in more detail.

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(2) What degree of processing is required to produce a finished product?

- Can the secondary material be fed directly into a process (i.e., direct use) or is reclamation (or pretreatment) required?
- How much value does final reclamation add?

(3) What is the value of the secondary material?

- o Is it listed in industry news letters, trade journals, etc.?
- o Does the secondary material have economic value comparable to the raw material that normally enters the process?

(4) Is there a guaranteed market for the end product?

- o Is there a contract in place to purchase the "product" ostensibly produced from the hazardous secondary materials?
- o If the type of recycling is reclamation, is the product used by the reclaimer? The generator? Is there a batch tolling agreement? (Note that since reclaimers are normally TSDFs, assuming they store before reclaiming, reclamation facilities present fewer possibilities of systemic abuse).
- o Is the reclaimed product a recognized commodity? Are there industry-recognized quality specifications for the product?

(5) Is the secondary material handled in a manner consistent with the raw material/product it replaces?

- o Is the secondary material stored on the land?
- o Is the secondary material stored in a similar manner as the analogous raw material (i.e., to prevent loss)?
- o Are adequate records regarding the recycling transactions kept?
- o Do the companies involved have a history of mismanagement of hazardous wastes?

(6) Other relevant factors.

- o What are the economics of the recycling process? Does most of the revenue come from charging generators for managing their wastes or from the sale of the product?
- o Are the toxic constituents actually necessary (or of sufficient use) to the product or are they just "along for the ride."

These criteria are drawn from 53 FR at 522 (January 8, 1988); 52 FR at 17013 (May 6, 1987); and 50 FR at 638 (January 4, 1985).

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee
To: Clair Location:
To: Location:
To: Location:
From: Date:

Interoffice Memorandum

TO: Kelsey Helton

FROM: Barry Andrews BA

DATE: November 22, 1991

SUBJ: Rinker Materials Corporation - Processing of Contaminated Soils from the Chemform Superfund Site

The proposal to allow Rinker Matrerials Corporation to process contaminated soils from the above referenced site has been considered. Presently, the air permits for sources at Rinker Materials Corporation allow the company to process soils that are contaminated with "on-spec" petroleum products and certain steam cleaning sludges. The permits do not authorize the processing of soils contaminated with other materials.

Pursuant to Rule 17-2.210, F.A.C., the owner or operator of any source of air pollution is required to obtain an air construction permit prior to beginning construction, modification, or operation of the source. Rule 17-2.100(127), F.A.C., defines a modification as, "Any physical change in, change in the method of operation of, or addition to a stationary source or facility which increases the actual emissions of any air pollutant regulated under this Chapter, including any not previously emitted, from any source or facility." It is our opinion that processing of contaminated soils from the Chemform site would be a change in the method of operation and may result in an increase in actual air pollutant emissions and/or the emission of pollutants that were not previously emitted. If Rinker Materials Corporation wishes to process the contaminated soil, then the company will need to submit a permit application for a modification.

The permit review process will give Rinker Materials Corporation an appropriate forum to provide the Department with reasonable assurance that treatment of the contaminated soil will neither result in any violations of ambient air quality standards nor endanger public health and welfare. If Rinker Materials Corporation does not believe that treatment of the contaminated soil would be a modification, the permit review process is still the appropriate forum to provide the Department with the

reasonable assurance to support the dissenting point of view. The permitting process will also ensure that both the Department-approved local air program and the public have an opportunity to comment on the proposal.

It is our understanding that Superfund Cleanup activities involve sites that are contaminated with hazardous wastes. The information included in the package that you provided indicates that the Department may not elect to classify the contaminated soil as a hazardous waste. If the soil is classified as a hazardous waste, Rinker Materials Corporation will need to obtain both an air construction permit and a RCRA permit. The air permit application and the RCRA permit application would be processed jointly by both programs.

If you have any questions, please call me at (904) 488-1344.

BDA\mdh

cc: C. Fancy
J. Pennington
P. Lewis
M. Harley
I. Goldman
S. Brooks
P. Wong

file

MORGAN, LEWIS & BOCKIUS

COUNSELORS AT LAW
5300 SOUTHEAST FINANCIAL CENTER
200 SOUTH BISCAYNE BOULEVARD
MIAMI, FLORIDA 33131-2339
TELEPHONE: (305) 579-0300
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TERRY L. ZINN
DIAL DIRECT (305) 579-0386

November 21, 1991

Dr. Alexander Padva
Waste Programs Administrator
Florida Department of Environmental Regulation
Southeast Florida District
1900 S. Congress Avenue
Suite A
West Palm Beach, Florida 33406

VIA FEDERAL EXPRESS

Mr. Robert Johns
Chief, Hazardous Waste Section
Dade County DERM
Suite 1310
111 N.W. First Street
Miami, Florida 33128-1971

BY HAND

Re: Use of Soils From the Chemform Site in the Materials Substitution Program at the Rinker Materials Cement Kiln

Dear Dr. Padva and Mr. Johns:

This letter is a follow up to the letter I sent you on October 25, 1991. We have received analysis as of the this date of the soils we are proposing to send to Rinker Materials for their materials substitution program. The soils have, we discovered, very low levels of PCBs, less than .52 parts per million in them. Based on the blending of the soils which will be required in loading them at the Chemform site as well as the blending which will be required because of the metal content and pursuant to 17-775 at the Rinker Cement Kiln, the soils will have PCBs below detection levels by the time they are substituted for materials in the cement kiln. In accordance with our discussions with Rinker Materials, we understand that once the materials are ready to be introduced into the kiln they will meet all the criteria of Rinker Materials' permits.

Since we just received this data, we wanted to make sure that you were fully apprised of all the information we had

regarding the soils. I would be more than glad to discuss these results with you or you are free to call Joel Balmat at Westinghouse Environmental at (407) 331-5967.

Sincerely yours,

Terry L. Zinn

TLZ/go
Enc.

c.c. Joel Balmat
Richard A. Pettigrew

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahasse, FL 32317-3056 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T1-02815

Received: 31 OCT 91

Mr. Joel Balmat
Westinghouse Environmental Services
370 South North Lake Blvd., Suite 1028
Altamonte Springs, Florida 32701

Project: ORWE 159/Chemform
Sampled By: Client

REPORT OF RESULTS Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
02815-1	SP-4	10-30-91
02815-2	SP-7A	10-30-91
02815-3	SP-7B	10-30-91
02815-4	SP-7C	10-30-91

PARAMETER	02815-1	02815-2	02815-3	02815-4
Cl-Pesticides/PCB (8080)				
Aroclor-1016, ug/kg dw	<430	<86	<86	<86
Aroclor-1221, ug/kg dw	<430	<86	<86	<86
Aroclor-1232, ug/kg dw	<430	<86	<86	<86
Aroclor-1242, ug/kg dw	<430	<86	<86	<86
Aroclor-1248, ug/kg dw	<430	<86	<86	<86
Aroclor-1254, ug/kg dw	510	<86	<86	<86
Aroclor-1260, ug/kg dw	<430	160	160	152
Surrogate - Dibutylchlorendate, %	84 %*	97 %*	80 %*	86 %*
Date Extracted	11.04.91	11.04.91	11.04.91	11.04.91
Date Analyzed	11.14.91	11.12.91	11.14.91	11.14.91

* Reported surrogate is TCX. Dibutyl chlorendate surrogate recovery was low due to the abundance of target analyte in the sample.

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahasse, FL 32317-3056 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T1-02815

Received: 31 OCT 91

Mr. Joel Balmat
Westinghouse Environmental Services
370 South North Lake Blvd., Suite 1028
Altamonte Springs, Florida 32701

Project: ORWE 159/Chamform
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
02815-5	Method Blank - Solid
02815-6	Matrix Spike % Recovery (MS)/Duplicate
02815-7	Accuracy Control Limit
02815-8	% Difference, MS/MSD
02815-9	Precision Control Limit

PARAMETER	02815-5	02815-6	02815-7	02815-8	02815-9
Cl-Pesticides/PCB (8080)					
Aroclor-1016, ug/kg dw	<80	---	---	---	---
Aroclor-1221, ug/kg dw	<80	---	---	---	---
Aroclor-1232, ug/kg dw	<80	---	---	---	---
Aroclor-1242, ug/kg dw	<80	---	---	---	---
Aroclor-1248, ug/kg dw	<80	---	---	---	---
Aroclor-1254, ug/kg dw	<80	---	---	---	---
Aroclor-1260, ug/kg dw	<80	76/79 %	50-130 %	9.6 %	<50 %
Surrogate - Dibutylchlorendate, %	113 %*	97/100 %*	20-150 %*	3.0 %*	<40 %*
Date Extracted	11.04.91	11.04.91	---	---	---
Date Analyzed	11.14.91	11.14.91	---	---	---

* Reported surrogate is TCX. Dibutyl chlorendate surrogate recovery was low due to the abundance of target analyte in the sample.

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahasse, FL 32317-3056 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T1-02815

Received: 31 OCT 91

Mr. Joel Balmat
Westinghouse Environmental Services
370 South North Lake Blvd., Suite 1028
Altamonte Springs, Florida 32701

Project: ORWE 159/Chemform
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
02815-10	Equipment Blank	10-30-91

PARAMETER	02815-10
Cl-Pesticides/PCB (8080)	
Aroclor-1016, ug/l	<0.50
Aroclor-1221, ug/l	<0.50
Aroclor-1232, ug/l	<0.50
Aroclor-1242, ug/l	<0.50
Aroclor-1248, ug/l	<0.50
Aroclor-1254, ug/l	<0.50
Aroclor-1260, ug/l	<0.50
Surrogate - Dibutylchlorendate, %	44 %
Date Extracted	11.05.91
Date Analyzed	11.12.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive (32301) • P.O. Box 13056 • Tallahasse, FL 32317-3056 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T1-02815

Received: 31 OCT 91

Mr. Joel Balmat
Westinghouse Environmental Services
370 South North Lake Blvd., Suite 1028
Altamonte Springs, Florida 32701

Project: ORWE 159/Chamform
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES
02815-11	Method Blank - Liquid
02815-12	Lab Control Standard
02815-13	Accuracy Control Limit
02815-14	% Difference, LCS/LCSD
02815-15	Precision Control Limit

PARAMETER	02815-11	02815-12	02815-13	02815-14	02815-15
Cl-Pesticides/PCB (8080)					
Aroclor-1016, ug/l	<0.50	---	---	---	---
Aroclor-1221, ug/l	<0.50	---	---	---	---
Aroclor-1232, ug/l	<0.50	---	---	---	---
Aroclor-1242, ug/l	<0.50	---	---	---	---
Aroclor-1248, ug/l	<0.50	---	---	---	---
Aroclor-1254, ug/l	<0.50	---	---	---	---
Aroclor-1260, ug/l	<0.50	79 %	50-120 %	7.6 %	<40 %
Surrogate - Dibutylchlorendate, %	42 %	48 %	24-154 %	13 %	<40 %
Date Extracted	11.05.91	---	---	---	---
Date Analyzed	11.12.91	---	---	---	---

Method: EPA SW-846
HRS Certification #'s:81291,87279,E81005,E87052

Janet B. Pruitt

Janet B. Pruitt

Westinghouse Environmental and Geotechnical Services, Inc.

Orlando, Florida

TO: Chemform File

FROM: Joel Balmat, Project Manager

DATE: October 23, 1991

RE: Technical Memorandum - Volatile Organic Analysis of Surface Soils
Chemform Site, Pompano Beach, Florida
Westinghouse Project No. ORW-E159

The purpose of this memo is to present background information and volatile organic sampling results for soils at the Chemform Site in support of disposal decisions for these soils.

1.0 BACKGROUND

On June 6-13, 1990, Westinghouse Environmental and Geotechnical Services, Inc. (Westinghouse) conducted surface soil sampling for organic parameters at the Chemform Site as a part of the Chemform Remedial Investigation (RI). The sampling activities consisted of:

- A soil vapor survey, using OVA headspace analysis to screen for the presence of volatile organics.
- Follow-up sampling for organics at 20 locations based on findings of the soil vapor survey.

2.0 SAMPLING PROCEDURES

All soil sampling at Chemform was conducted in accordance with the EPA-approved Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP).

2.1 Soil Vapor Survey

Westinghouse conducted a soil vapor survey at the site on June 6-9, 1990. Surface soils (0-6 inches) were screened at 113 locations across the site using the following procedures:

1. A surface soil sample was taken at each screening location with a stainless-steel spoon and then placed in a glass mason jar, filing it half-way.

2. The top of the jar was covered with aluminum foil and the outer ring of the jar lid was screwed on to form a tight seal.

3. The sample was placed in a 20° C water bath and allowed to equilibrate for at least 5 minutes.

4. A total organic vapor reading was taken in the air "headspace" in the jar by piercing the foil cover with the probe of a calibrated Organic Vapor Analyzer (OVA) and recording the total organic vapor concentration in parts per million (ppm).

Figure 1 shows the soil screening locations and OVA screening results.

2.2 Volatile Organics Sampling

Based on the OVA screening results, soils were sampled for volatile organics on June 13, 1990 at 20 of the 113 screening locations. Sampling was conducted in accordance with Section 6.3 of the FSP. At each sampling point the following procedures were followed:

1. Surface debris (e.g., stones, leaves) was cleared from the soil surface.

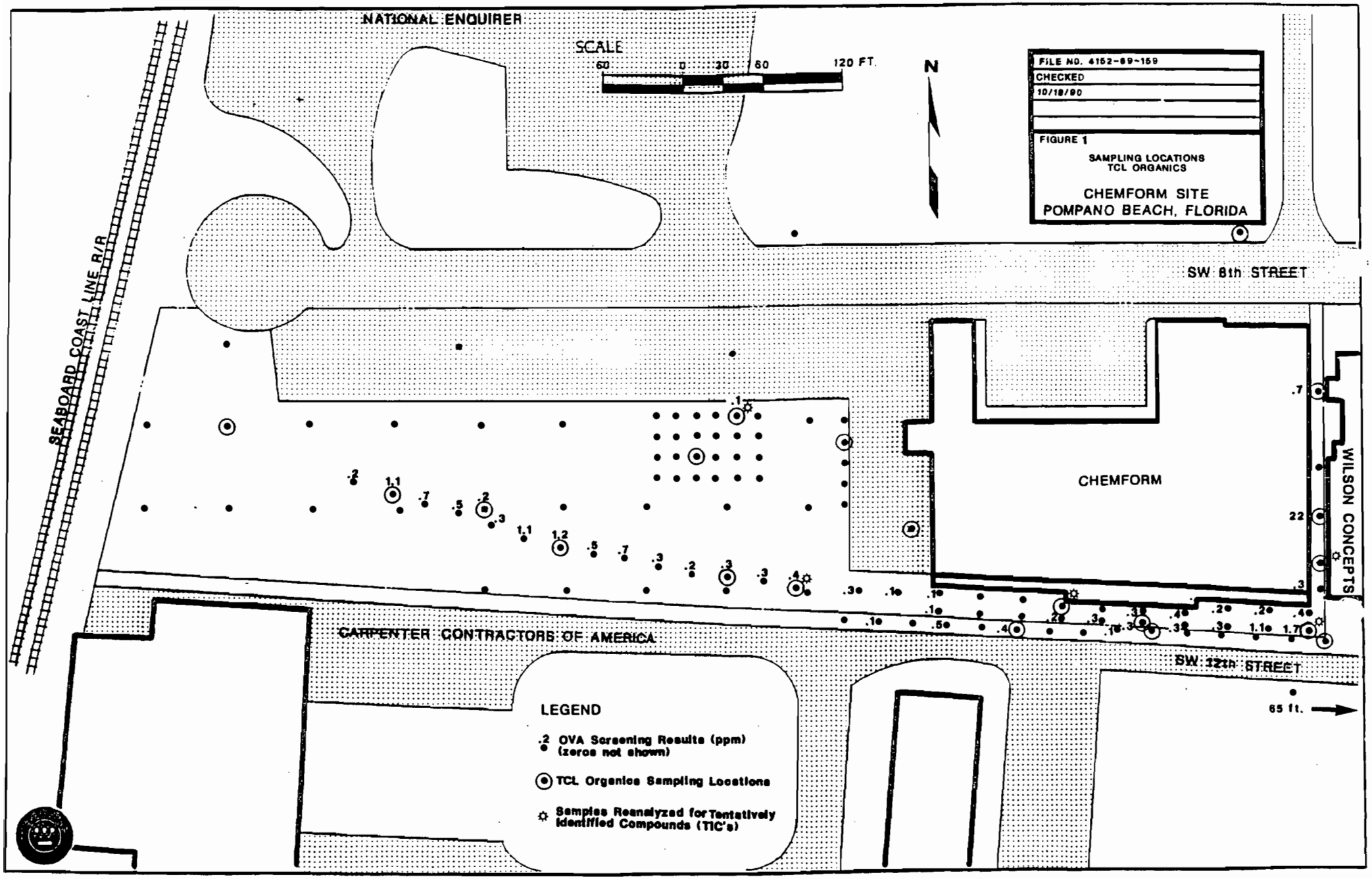
2. Soil was removed to a depth of 6 inches with a stainless-steel spoon and placed in a glass pan for compositing.

3. The soil was mixed in the glass pan to form a homogeneous sample.

4. The homogenized sample was transferred to a sample container which was labeled, sealed, and placed on ice in a cooler.

5. Samples were shipped in the cooler, with a completed chain-of-custody form, to the analytical laboratory.

Figure 1 shows the soil sampling locations.


NATIONAL ENQUIRER
SCALE
60 0 30 60 120 FT.
N
FILE NO. 4152-89-159
CHECKED
10/18/90
FIGURE 1
SAMPLING LOCATIONS
TCL ORGANICS
CHEMFORM SITE
POMPANO BEACH, FLORIDA
SEABOARD COAST LINE R/R
SW 8th STREET
CHEMFORM
WILSON CONCEPTS
CARPENTER CONTRACTORS OF AMERICA
SW 12th STREET
65 ft.
LEGEND
.2 OVA Screening Results (ppm) (zeros not shown)
TCL Organics Sampling Locations
Samples Reanalyzed for Tentatively Identified Compounds (TIC's)

3.0 QUALITY CONTROL

All sampling activities were conducted in compliance with Westinghouse's approved Field Sampling Plan for the Chemform RI. Field activities were documented in a bound field notebook.

Disposable latex gloves were used for handling all sampling equipment and sample bottles. All sampling equipment was decontaminated prior to and between samples as follows:

- "Liquinox" detergent was, using brushes to remove soils.
- Tap water rinse.
- Deionized water rinse.
- Equipment was allowed to air dry.

Strict chain-of-custody was observed throughout this sampling activity. Following procurement of each sample, the sample bottles were immediately labeled and a custody seal was placed over each cap. Samples were then placed on ice in coolers before shipping to the laboratory with a completed chain-of-custody form. Samples were shipped to Savannah Laboratories in Tallahassee, Florida for lab analysis. Savannah is a Florida-certified laboratory whose Generic Quality Assurance Plan has been approved by EPA for use under the RI.

Duplicate samples were submitted as a check on sampling precision; an equipment blank was submitted as a check on decontamination procedures; and a trip blank was submitted as a check on inadvertent sample contamination.

4.0 LABORATORY ANALYSIS

Soil samples were analyzed for volatile organic parameters by EPA Method 8240. Laboratory data sheets are attached.

5.0 DATA EVALUATION

Although low-level organic vapor concentrations were observed in the soil vapor survey, none of the 20 soil samples submitted for lab analysis showed detectable concentrations of volatile organic parameters.

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2846 Industrial Plaza Drive • Tallahassee, FL 32301 • (904) 878-3994 • Fax (904) 878-9504

LOG NO: T0-07267

Received: 15 JUN 90

Mr. Joel Balmat
Westinghouse Environmental Services
393 Whooping Loop Lane, Suite 1461
Altamonte Springs, Florida 32701

Project: 4152-89-159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
07267-1	SS-33 (06.13.90)	Client
07267-2	SS-39 (06.13.90)	
07267-3	SS-49 (06.13.90)	
07267-4	SS-53 (06.13.90)	
07267-5	SS-65 (06.13.90)	

PARAMETER	07267-1	07267-2	07267-3	07267-4	07267-5
Volatile Organic Compounds (8240)					
Chloromethane, ug/kg dw	<12	<12	<12	<12	<12
Bromomethane, ug/kg dw	<12	<12	<12	<12	<12
Vinyl Chloride, ug/kg dw	<12	<12	<12	<12	<12
Chloroethane, ug/kg dw	<12	<12	<12	<12	<12
Methylene Chloride, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Acetone, ug/kg dw	<120	<120	<120	<120	<120
Carbon Disulfide, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1-Dichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1-Dichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
cis/trans-1,2-Dichloroethyl ene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Chloroform, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,2-Dichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Butanone, ug/kg dw	<120	<120	<120	<120	<120
1,1,1-Trichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Carbon Tetrachloride, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Vinyl Acetate, ug/kg dw	<60	<60	<60	<60	<60
Bromodichloromethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0

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07267-3	SS-49 (06.13.90)	
07267-4	SS-53 (06.13.90)	
07267-5	SS-65 (06.13.90)	

PARAMETER	07267-1	07267-2	07267-3	07267-4	07267-5
1,2-Dichloropropane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Trans-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Trichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Dibromochloromethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1,2-Trichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Benzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Cis-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Chloroethylvinyl Ether, ug/kg dw	<12	<12	<12	<12	<12
Bromoform, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Hexanone, ug/kg dw	<60	<60	<60	<60	<60
4-methyl-2-pentanone, ug/kg dw	<60	<60	<60	<60	<60
Tetrachloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Toluene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Chlorobenzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Ethylbenzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Styrene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Xylenes, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0

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LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
07267-6	SS-83 (06.13.90)	Client
07267-7	SS-106 (06.13.90)	
07267-8	SS-72 (06.13.90)	
07267-9	SS-4 (06.13.90)	
07267-10	SS-11 (06.13.90)	

PARAMETER	07267-6	07267-7	07267-8	07267-9	07267-10
Volatile Organic Compounds (8240)					
Chloromethane, ug/kg dw	<12	<12	<12	<12	<12
Bromomethane, ug/kg dw	<12	<12	<12	<12	<12
Vinyl Chloride, ug/kg dw	<12	<12	<12	<12	<12
Chloroethane, ug/kg dw	<12	<12	<12	<12	<12
Methylene Chloride, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Acetone, ug/kg dw	<120	<120	<120	<120	<120
Carbon Disulfide, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1-Dichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1-Dichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
cis/trans-1,2-Dichloroethyl ene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Chloroform, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,2-Dichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Butanone, ug/kg dw	<120	<120	<120	<120	<120
1,1,1-Trichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Carbon Tetrachloride, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Vinyl Acetate, ug/kg dw	<60	<60	<60	<60	<60
Bromodichloromethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0

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07267-7	SS-106 (06.13.90)	
07267-8	SS-72 (06.13.90)	
07267-9	SS-4 (06.13.90)	
07267-10	SS-11 (06.13.90)	

PARAMETER	07267-6	07267-7	07267-8	07267-9	07267-10
1,2-Dichloropropane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Trans-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Trichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Dibromochloromethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1,2-Trichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Benzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Cis-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Chloroethylvinyl Ether, ug/kg dw	<12	<12	<12	<12	<12
Bromoform, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Hexanone, ug/kg dw	<60	<60	<60	<60	<60
4-methyl-2-pentanone, ug/kg dw	<60	<60	<60	<60	<60
Tetrachloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Toluene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Chlorobenzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Ethylbenzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Styrene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Xylenes, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0

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07267-11	SS-91 (06.13.90)	Client
07267-12	SS-94 (06.13.90)	
07267-13	SS-109 (06.13.90)	
07267-14	SS-105 (06.13.90)	
07267-15	SS-108 (06.13.90)	

PARAMETER	07267-11	07267-12	07267-13	07267-14	07267-15
Volatile Organic Compounds (8240)					
Chloromethane, ug/kg dw	<12	<12	<12	<12	<12
Bromomethane, ug/kg dw	<12	<12	<12	<12	<12
Vinyl Chloride, ug/kg dw	<12	<12	<12	<12	<12
Chloroethane, ug/kg dw	<12	<12	<12	<12	<12
Methylene Chloride, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Acetone, ug/kg dw	<120	<120	<120	<120	<120
Carbon Disulfide, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1-Dichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1-Dichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
cis/trans-1,2-Dichloroethyl ene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Chloroform, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,2-Dichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Butanone, ug/kg dw	<120	<120	<120	<120	<120
1,1,1-Trichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Carbon Tetrachloride, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Vinyl Acetate, ug/kg dw	<60	<60	<60	<60	<60
Bromodichloromethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0

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07267-12	SS-94 (06.13.90)	
07267-13	SS-109 (06.13.90)	
07267-14	SS-105 (06.13.90)	
07267-15	SS-108 (06.13.90)	

PARAMETER	07267-11	07267-12	07267-13	07267-14	07267-15
1,2-Dichloropropane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Trans-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Trichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Dibromochloromethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
1,1,2-Trichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Benzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Cis-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Chloroethylvinyl Ether, ug/kg dw	<12	<12	<12	<12	<12
Bromoform, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
2-Hexanone, ug/kg dw	<60	<60	<60	<60	<60
4-methyl-2-pentanone, ug/kg dw	<60	<60	<60	<60	<60
Tetrachloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Toluene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Chlorobenzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Ethylbenzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Styrene, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0
Xylenes, ug/kg dw	<6.0	<6.0	<6.0	<6.0	<6.0

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07267-16	SS-81 (06.13.90)	Client
07267-17	SS-112 (06.13.90)	
07267-18	Duplicate (06.13.90)	
07267-19	SS-76 (06.13.90)	

PARAMETER	07267-16	07267-17	07267-18	07267-19
Volatile Organic Compounds (8240)				
Chloromethane, ug/kg dw	<12	<12	<12	<12
Bromomethane, ug/kg dw	<12	<12	<12	<12
Vinyl Chloride, ug/kg dw	<12	<12	<12	<12
Chloroethane, ug/kg dw	<12	<12	<12	<12
Methylene Chloride, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Acetone, ug/kg dw	<120	<120	<120	<120
Carbon Disulfide, ug/kg dw	<6.0	<6.0	<6.0	<6.0
1,1-Dichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
1,1-Dichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0
cis/trans-1,2-Dichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Chloroform, ug/kg dw	<6.0	<6.0	<6.0	<6.0
1,2-Dichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0
2-Butanone, ug/kg dw	<120	<120	<120	<120
1,1,1-Trichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Carbon Tetrachloride, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Vinyl Acetate, ug/kg dw	<60	<60	<60	<60
Bromodichloromethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0
1,2-Dichloropropane, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Trans-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0	<6.0	<6.0

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07267-17	SS-112 (06.13.90)	
07267-18	Duplicate (06.13.90)	
07267-19	SS-76 (06.13.90)	

PARAMETER	07267-16	07267-17	07267-18	07267-19
Trichloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Dibromochloromethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0
1,1,2-Trichloroethane, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Benzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Cis-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
2-Chloroethylvinyl Ether, ug/kg dw	<12	<12	<12	<12
Bromoform, ug/kg dw	<6.0	<6.0	<6.0	<6.0
2-Hexanone, ug/kg dw	<60	<60	<60	<60
4-methyl-2-pentanone, ug/kg dw	<60	<60	<60	<60
Tetrachloroethylene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Toluene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Chlorobenzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Ethylbenzene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Styrene, ug/kg dw	<6.0	<6.0	<6.0	<6.0
Xylenes, ug/kg dw	<6.0	<6.0	<6.0	<6.0

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& ENVIRONMENTAL SERVICES, INC.

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LOG NO: T0-07267

Received: 15 JUN 90

Mr. Joel Balmat
Westinghouse Environmental Services
393 Whooping Loop Lane, Suite 1461
Altamonte Springs, Florida 32701

Project: 4152-89-159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
07267-20	SS-58 (06.13.90)	Client
07267-21	SS-63 (06.13.90)	

PARAMETER	07267-20	07267-21			
Volatile Organic Compounds (8240)					
Chloromethane, ug/kg dw	<12	<12			
Bromomethane, ug/kg dw	<12	<12			
Vinyl Chloride, ug/kg dw	<12	<12			
Chloroethane, ug/kg dw	<12	<12			
Methylene Chloride, ug/kg dw	<6.0	<6.0			
Acetone, ug/kg dw	<120	<120			
Carbon Disulfide, ug/kg dw	<6.0	<6.0			
1,1-Dichloroethylene, ug/kg dw	<6.0	<6.0			
1,1-Dichloroethane, ug/kg dw	<6.0	<6.0			
cis/trans-1,2-Dichloroethylene, ug/kg dw	<6.0	<6.0			
Chloroform, ug/kg dw	<6.0	<6.0			
1,2-Dichloroethane, ug/kg dw	<6.0	<6.0			
2-Butanone, ug/kg dw	<120	<120			
1,1,1-Trichloroethane, ug/kg dw	<6.0	<6.0			
Carbon Tetrachloride, ug/kg dw	<6.0	<6.0			
Vinyl Acetate, ug/kg dw	<60	<60			
Bromodichloromethane, ug/kg dw	<6.0	<6.0			
1,1,2,2-Tetrachloroethane, ug/kg dw	<6.0	<6.0			
1,2-Dichloropropane, ug/kg dw	<6.0	<6.0			
Trans-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0			
Trichloroethylene, ug/kg dw	<6.0	<6.0			
Dibromochloromethane, ug/kg dw	<6.0	<6.0			

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
07267-20	SS-58 (06.13.90)	Client
07267-21	SS-63 (06.13.90)	

PARAMETER	07267-20	07267-21			
1,1,2-Trichloroethane, ug/kg dw	<6.0	<6.0			
Benzene, ug/kg dw	<6.0	<6.0			
Cis-1,3-Dichloropropene, ug/kg dw	<6.0	<6.0			
2-Chloroethylvinyl Ether, ug/kg dw	<12	<12			
Bromoform, ug/kg dw	<6.0	<6.0			
2-Hexanone, ug/kg dw	<60	<60			
4-methyl-2-pentanone, ug/kg dw	<60	<60			
Tetrachloroethylene, ug/kg dw	<6.0	<6.0			
Toluene, ug/kg dw	<6.0	<6.0			
Chlorobenzene, ug/kg dw	<6.0	<6.0			
Ethylbenzene, ug/kg dw	<6.0	<6.0			
Styrene, ug/kg dw	<6.0	<6.0			
Xylenes, ug/kg dw	<6.0	<6.0			

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Project: 4152-89-159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
07267-24	Equipment Blank (06.13.90)	Client

PARAMETER	07267-24
601 and 602	
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<1.0
Bromomethane, ug/l	<1.0
Benzene, ug/l	<1.0
Carbon Tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
2-Chloroethylvinyl Ether, ug/l	<1.0
Chloroform, ug/l	<1.0
Ethylbenzene, ug/l	<1.0
Chloromethane, ug/l	<1.0
Dibromochloromethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Dichlorodifluoromethane, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethene, ug/l	<1.0
cis/trans-1,2-Dichloroethylene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
Cis-1,3-Dichloropropene, ug/l	<1.0
Trans-1,3-Dichloropropene, ug/l	<1.0

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Project: 4152-89-159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
07267-24	Equipment Blank (06.13.90)	Client

PARAMETER	07267-24
Methylene Chloride, ug/l	2.4
1,1,2,2-Tetrachloroethane, ug/l	<1.0
Tetrachloroethylene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
Xylenes, ug/l	<1.0

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Project: 4152-89-159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
07267-25	Lab Blank	Client
07267-26	Matrix Spike % Recovery	
07267-27	Matrix Spike Duplicate % Recovery	
07267-28	% Difference Matrix Spike	
07267-29	Date Extracted/Date Analyzed	

PARAMETER	07267-25	07267-26	07267-27	07267-28	07267-29
Volatile Organic Compounds (8240)					
Chloromethane, ug/kg dw	<11	---	---	---	6.25/6.25
Bromomethane, ug/kg dw	<11	---	---	---	6.25/6.25
Vinyl Chloride, ug/kg dw	<11	---	---	---	6.25/6.25
Chloroethane, ug/kg dw	<11	---	---	---	6.25/6.25
Methylene Chloride, ug/kg dw	<5.6	---	---	---	6.25/6.25
Acetone, ug/kg dw	<110	---	---	---	6.25/6.25
Carbon Disulfide, ug/kg dw	<5.6	---	---	---	6.25/6.25
1,1-Dichloroethylene, ug/kg dw	<5.6	93 %	93 %	0.10 %	6.25/6.25
1,1-Dichloroethane, ug/kg dw	<5.6	---	---	---	6.25/6.25
cis/trans-1,2-Dichloroethyl ene, ug/kg dw	<5.6	---	---	---	6.25/6.25
Chloroform, ug/kg dw	<5.6	---	---	---	6.25/6.25
1,2-Dichloroethane, ug/kg dw	<5.6	---	---	---	6.25/6.25
2-Butanone, ug/kg dw	<110	---	---	---	6.25/6.25
1,1,1-Trichloroethane, ug/kg dw	<5.6	---	---	---	6.25/6.25
Carbon Tetrachloride, ug/kg dw	<5.6	---	---	---	6.25/6.25
Vinyl Acetate, ug/kg dw	56	---	---	---	6.25/6.25
Bromodichloromethane, ug/kg dw	<5.6	---	---	---	6.25/6.25
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.6	---	---	---	6.25/6.25

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Project: 4152-89-159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
07267-25	Lab Blank	Client
07267-26	Matrix Spike % Recovery	
07267-27	Matrix Spike Duplicate % Recovery	
07267-28	% Difference Matrix Spike	
07267-29	Date Extracted/Date Analyzed	

PARAMETER	07267-25	07267-26	07267-27	07267-28	07267-29
1,2-Dichloropropane, ug/kg dw	<5.6	---	---	---	6.25/6.25
Trans-1,3-Dichloropropene, ug/kg dw	<5.6	---	---	---	6.25/6.25
Trichloroethylene, ug/kg dw	<5.6	116 %	116 %	0.50 %	6.25/6.25
Dibromochloromethane, ug/kg dw	<5.6	---	---	---	6.25/6.25
1,1,2-Trichloroethane, ug/kg dw	<5.6	---	---	---	6.25/6.25
Benzene, ug/kg dw	<5.6	108 %	109 %	0.3 %	6.25/6.25
Cis-1,3-Dichloropropene, ug/kg dw	<5.6	---	---		6.25/6.25
2-Chloroethylvinyl Ether, ug/kg dw	<11	---	---	0.30 %	6.25/6.25
Bromoform, ug/kg dw	<5.6	---	---	---	6.25/6.25
2-Hexanone, ug/kg dw	<56	---	---	---	6.25/6.25
4-methyl-2-pentanone, ug/kg dw	<56	---	---	---	6.25/6.25
Tetrachloroethylene, ug/kg dw	<5.6	---	---	---	6.25/6.25
Toluene, ug/kg dw	<5.6	93 %	91 %	2.2 %	6.25/6.25
Chlorobenzene, ug/kg dw	<5.6	95 %	93 %	2.1 %	6.25/6.25
Ethylbenzene, ug/kg dw	<5.6	---	---	---	6.25/6.25
Styrene, ug/kg dw	<5.6	---	---	---	6.25/6.25
Xylenes, ug/kg dw	<5.6	---	---	---	6.25/6.25

Westinghouse Environmental and Geotechnical Services, Inc.

Orlando, Florida

TO: Chemform File

FROM: Joel Balmat, Project Manager

DATE: October 11, 1991

RE: Technical Memorandum - Soil Stockpile Analysis
Chemform Site, Pompano Beach, Florida
Westinghouse Project No. ORW-E159

The purpose of this memo is to provide background information and analytical results for soils stockpiled at the Chemform Site in support of disposal decisions for these soils.

1.0 BACKGROUND

On July 16-20, 1991, Westinghouse Environmental and Geotechnical Services, Inc. (Westinghouse) excavated and stockpiled about 500 cubic yards of soil at the Chemform Site. This activity was conducted in compliance with a June 28, 1990 notification letter from U.S. EPA, Region IV's Removal Program Office. This notification was issued pursuant to an April 17, 1990 EPA Removal Order, and required excavation and disposal of soils at the site exceeding certain specified cleanup standards.

Five separate soil stockpiles were produced by excavating the upper 16 inches of soil in five distinct areas of the site. The stockpiles were placed onto 10-mil reinforced PVC liners in the parking lot area of the site. The oversized bottom liner was drawn over each pile to cover it and then the cover was weighted down to secure it over the pile. One area of the site designated for cleanup (right-of-way) was not excavated because of an access issue. Nevertheless, this area is referred to as Stockpile (SP) 1 and was sampled for soil disposal purposes.

2.0 SAMPLING PROCEDURES

The five stockpiles (SP-2 through SP-7) were sampled on August 16, 1991. The right-of-way area of the site (SP-1) was sampled on August 15, 1991.

Soil sampling was conducted as follows:

1) Each stockpile (except SP-5/6) was sampled in 2 locations. SP-5/6 was sampled in one location.

2) SP-1 soil (right-of-way) was not excavated and stockpiled. In-place soils in this area were sampled in 4 evenly spaced locations. SP-1 samples were taken from the 0-1 foot interval below land surface.

3) At each stockpile sampling location, vertical soil samples were taken from the top to the bottom of the stockpile using a decontaminated stainless steel hand auger. One-foot vertical soil samples were retrieved from the piles at every other foot (i.e., 0-1 foot, 2-3 feet, 4-5 feet, etc.). Because of its small size, however, SP-5/6 was sampled continuously (e.g., 0-1 feet, 1-2 feet, etc.) in only one location.

4) Individual samples taken in each stockpile were mixed to produce one composite sample per pile. The 4 samples taken in the right-of-way were also mixed to produce one composite sample. Samples were composited in a decontaminated plastic basin using a stainless steel spoon.

Table 2-1 provides descriptions of the stockpiles and associated sampling information. Figure 2-1 shows the locations of soil excavations, stockpiles, and sampling points.

3.0 QUALITY CONTROL

All sampling activities were conducted in compliance with Westinghouse's approved Quality Assurance Project Plan for the Chemform Remedial Investigation (RI). Field activities were documented in a bound field notebook.

Disposable latex gloves were used for handling all sampling equipment and sample bottles. All sampling equipment was decontaminated prior to and between samples as follows:

- "Liquinox" detergent wash, using brushes to remove soils.
- Tap water rinse.
- Deionized water rinse.
- Equipment was allowed to air dry.

Strict chain-of-custody was observed throughout this sampling activity. Following procurement of each sample, the sample bottles were immediately labeled and a custody seal was placed over each cap. Samples were then placed on ice in coolers before shipping to the laboratory with a completed chain-of-custody form.

Samples were shipped to Savannah Laboratories in Tallahassee, Florida for lab analysis. Savannah is a Florida-certified laboratory whose Generic Quality Assurance Plan has been approved by EPA for use under the RI.

SP-5 and SP-6 were submitted as duplicate samples. An equipment blank (SP-8) was submitted as a check on decontamination procedures.

4.0 LABORATORY ANALYSIS

Analytical protocols used for the stockpiles are identified in Table 4-1. Laboratory data sheets are provided in the Appendix.

Total RCRA metals results are presented in Table 4-2 and TCLP metals results are presented in Table 4-3. An equipment blank (SP-8) was submitted as a check on equipment decontamination. The blank results are presented in the Appendix. Low concentrations of chromium, mercury, and nickel were detected in the equipment blank.

5.0 DATA EVALUATION

5.1 Total Metals

Table 4-2 presents total RCRA metals results compared to the clean soil standards established for thermal treatment facilities under Florida Chapter 17-775.400.

The clean soil standard for chromium was exceeded in SP-3, 4, 5/6, and 7. The mercury standard was exceeded only in SP 5/6.

A volume-weighted average concentration of each metal was calculated to see how mixing of the stockpiles would affect metals concentrations. Mixing of soils is permitted under Chapter 17-775 in order to meet total metals standards. The volume-weighted average chromium concentration exceeded its standard, but the volume-weighted average mercury concentration did not exceed its standard.

5.2 TCLP Metals

Table 4-3 presents TCLP metals results compared to the TCLP limits. If a TCLP limit is exceeded, the material is defined as a hazardous waste under RCRA. The TCLP limits also represent clean soil standards for thermal treatment facilities under Florida Chapter 17-775.400. All stockpile sample results were below TCLP limits (i.e., clean soil standards).

A potential quality control issue arose during the TCLP analyses which is described below:

- The TCLP cadmium result for SP-7 was initially reported by the lab as 1.0 mg/l (see Appendix, page 9 of data set T1-02171). This result was inconsistent with the TCLP cadmium values in the other stockpiles when comparing the TCLP cadmium values to the total cadmium values. The total cadmium concentration in SP-7 was 23 mg/kg, approximately the same concentration found in SP-3 (20 mg/kg) and SP-5/6 (23 mg/kg). However, the TCLP cadmium concentration was only 0.28 mg/l in SP-3 and only 0.063 mg/l in SP-5/6 (see Tables 4-2 and 4-3) as compared to 1.0 mg/l in SP-7.

- To further evaluate this apparent inconsistency, the lab was directed to reanalyze the retained SP-7 sample for the TCLP parameters which were found above detection limits in the first sample (i.e., barium and cadmium). The reanalysis resulted in a TCLP cadmium concentration of 0.28 mg/l, a 72 percent reduction in the original value (see Appendix, data set T1-2171A, page 1). This TCLP cadmium concentration was more consistent with the other TCLP cadmium results. A 44 percent reduction in the original barium value also was observed in the SP-7 reanalysis.

- The cadmium and barium TCLP data presented in Table 4-3 represent arithmetic averages of the two sequential analyses of SP-7.

TABLE 2-1
Description of Soil Stockpiles
Chemform Site, Pompano Beach, Florida

Stockpile	Volume (cubic yards)[2]	Origin of Soils	No. of Sampling Locations	Sampling Intervals (feet below surface)	Total No. Samples in Composite
SP-1[1]	78 (98)	Right-of-Way (9x 175 ft.)[3]	4	0-1	4
SP-2	77 (96)	Old Drum Storage Area (20 x 78 ft.)	2	a) 0-1, 2-3, 4-5, 6-7 b) 0-1, 2-3, 4-5	7
SP-3	34 (43)	Old Sludge Trench (13 x 53 ft.)	2	a) 0-1, 2-3, 4-5 b) 0-1, 2-3, 4-5	6
SP-4	67 (84)	Old Wastewater Trench (5 x 270 ft.)	2	a) 0-1, 2-3, 4-5 b) 0-1, 2-3, 4-5	6
SP-5/6[4]	15 (19)	Old Wastewater Trench - Dark Granular Layer (5 x 60 ft.)	1	0-1, 1-2, 2-3, 3-4, 4-4.5	5
SP-7	231 (289) Totals 502 (629)	Porch (20 x 235 ft.)	2	a) 0-1, 2-3, 4-5, 6-7 b) 0-1, 2-3, 4-5, 6-7	8

Notes:

1) SP-1 soils not stockpiled at time of sampling, soil samples taken in ground.

2) First value represents volume of soil in the ground. Value in parentheses represents 25 percent soil volume increase over in-ground values after soil excavated and placed in stockpiles.

3) Dimensions (in feet) of excavated area are in parentheses; average depth of all excavations was 16 inches.

4) SP-5/6 refers to fact that duplicate samples were taken of stockpile.

Table 4-1
Stockpile Analytical Methods
Chemform Site, Pompano Beach, Florida

CONSTITUENTS	EPA METHOD (SW-846)	CONTAINER TYPE AND VOLUME	PRESERVATIVE	HOLDING TIME	PRACTICAL QUANTITATION LIMIT [1]
Total RCRA Metals plus Nickel					
Arsenic	3050/7060	500 ml. polyethylene	4°C	6 mo.	1.0
Barium	3050/6010				1.0
Cadmium	3050/6010				0.5
Chromium	3050/6010				1.0
Lead	3050/7421				0.5
Mercury	7471			28 days	0.03
Nickel	3050/6010			6 mo.	2.0
Selenium	3050/7740				1.0
Silver	3050/6010				1.0
RCRA Metals in TCLP Extract[2]					
Arsenic	3010/6010	500 ml. polyethylene	4°C	6 mo.	0.20
Barium	3010/6010				0.050
Cadmium	3010/6010				0.010
Chromium	3010/6010				0.050
Lead	3010/6010				0.10
Mercury	7470			28 days	0.020
Selenium	3010/6010			6 mo.	0.20
Silver	3010/6010				0.010

Notes:
1) Practical Quantitation Limits for total metals in mg/kg; TCLP metals in mg/l.
2) TCLP extraction by EPA Method 1311.

Table 4-2
Total Metals Concentrations in Soil Stockpiles
Chemform Site, Pompano Beach, Florida

Parameter	SP-1[1]	SP-2	SP-3	SP-4	Sp-5/6[2]	SP-7	Volume Weighted Average[3]	Clean Soil Standard[4]
Arsenic	3.4	< 1.0	1.3	< 1.0	1.6	32	18	55
Barium	4.2	3.2	2.9	1.4	7.0	7.5	5.4	2,750
Cadmium	2.8	1.9	20	3.2	23	23	16	55
Chromium	230	210	470[5]	910	13,000	380	850	275
Lead	14	43	2.9	12	56	48	40	77
Mercury	0.85	0.25	2.0	4.6	59	7.0	6.8	17
Nickel	520	120	2,700	2,100	25,000	990	2,000	NA[6]
Selenium	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	165
Silver	< 1.0	2.3	2.1	3.6	33	3.2	4.1	165

Notes: 1) SP-1 soil was not stockpiled and is not included in weighted average.

2) SP-5/6 values are arithmetic averages of duplicate analyses.

3) The following estimated stockpile volumes were used in calculation of the weighted average:

Stockpile	Volume (cu. yd.)
SP-2	77
SP-3	34
SP-4	67
SP-5/6	15
SP-7	231

4) Florida Chapter 17-775.400 criteria for clean soil for thermal treatment facilities.

5) Shaded values exceed clean soil standard.

6) Not applicable.

All concentrations in mg/kg dry weight.

Table 4-3
TCLP Metals/Concentrations in Soil Stockpiles
Chemform Site, Pompano Beach, Florida

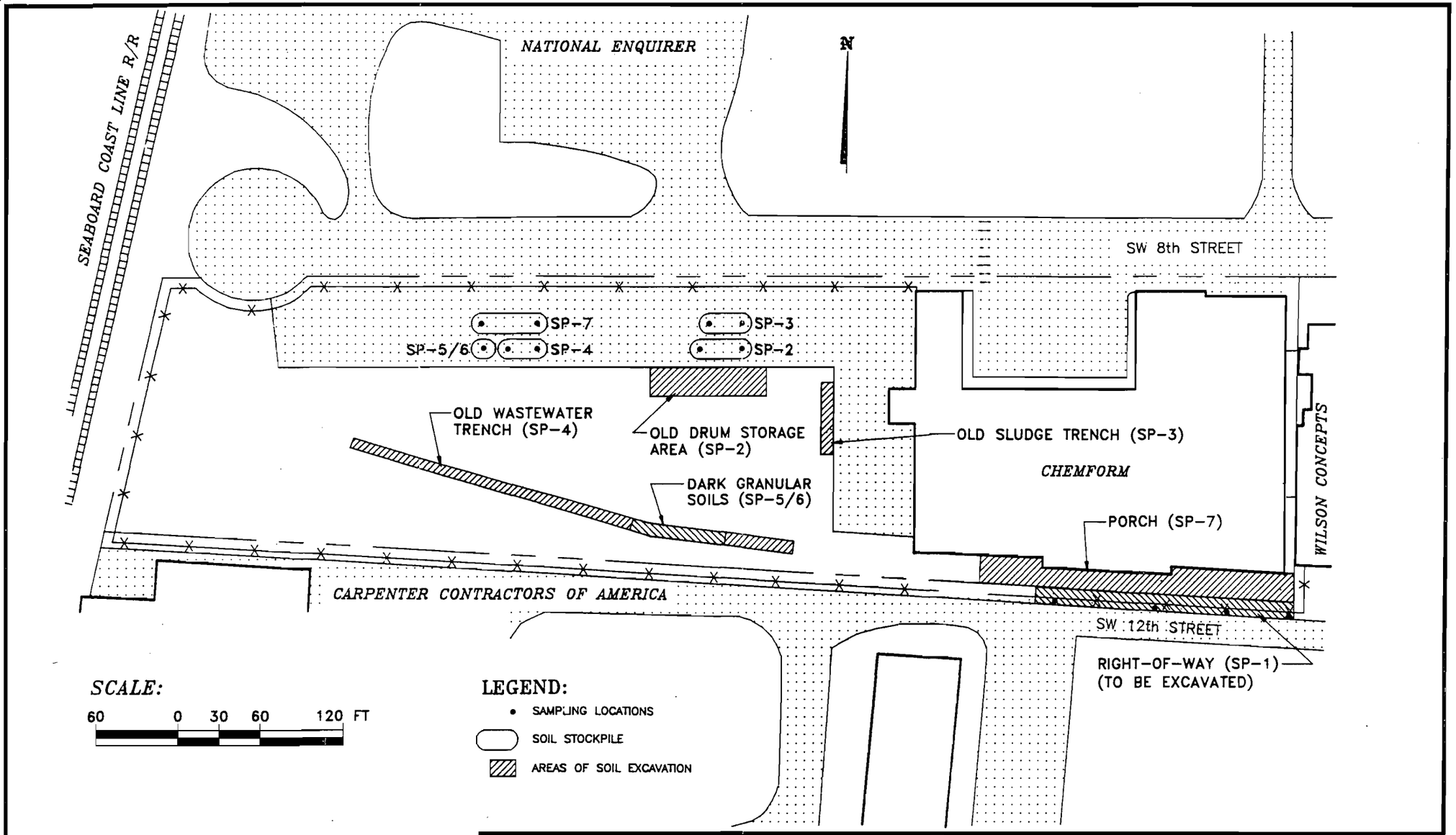
Parameter	SP-1	SP-2	SP-3	SP-4	Sp-5/6[1]	SP-7	Clean Soil Standard[2]
Arsenic	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	5.0
Barium	0.99	0.085	< 0.05	< 0.05	< 0.05	0.086[3]	100.0
Cadmium	0.046	0.041	0.28	0.05	0.063	0.64[3]	1.0
Chromium	< 0.05	< 0.05	< 0.05	1.0	3.5	< 0.050	5.0
Lead	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.0
Mercury	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.2
Selenium	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	1.0
Silver	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	5.0

Notes: 1) SP-5/6 values are arithmetic averages of duplicate analyses.

2) Florida Chapter 17-775.400 criteria for clean soil for thermal treatment facilities.

3) Average of 2 sequential analyses of same sample.

All concentrations in mg/l.



FILE NO.: ORW-E159 CHECKED 4-26-91	Westinghouse Environmental and Geotechnical Services, Inc. ORLANDO • TAMPA • DEERFIELD BEACH FLORIDA	FIGURE 2-1 *SOIL EXCAVATION AREAS AND STOCKPILES* *CHEMFORM SITE* *POMPANO BEACH, FLORIDA*

Appendix

Soil Stockpile Analytical Data

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

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LOG NO: T1-02169

Received: 16 AUG 91

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Altamonte Springs, Florida 32701

Project: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02169-13	SP-1 (08.15.91)	Client

PARAMETER	02169-13
Arsenic	
Arsenic, mg/kg dw	3.4
Date Analyzed	08.29.91
Barium	
Barium, mg/kg dw	4.2
Date Analyzed	08.29.91
Cadmium	
Cadmium, mg/kg dw	2.8
Date Analyzed	08.29.91
Chromium	
Chromium, mg/kg dw	230
Date Analyzed	08.29.91
Lead	
Lead, mg/kg dw	14
Date Analyzed	09.03.91
Mercury	
Mercury, mg/kg dw	0.85
Date Analyzed	09.03.91
Selenium	
Selenium, mg/kg dw	<1.0
Date Analyzed	08.30.91
Silver	
Silver, mg/kg dw	<1.0
Date Analyzed	08.29.91

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LOG NO: T1-02169

Received: 16 AUG 91

Mr. Joel Balmat
Westinghouse Environmental Services
370 South North Lake Blvd., Suite 1028
Altamonte Springs, Florida 32701

Project: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02169-13	SP-1 (08.15.91)	Client

PARAMETER	02169-13
Nickel	
Nickel, mg/kg dw	520
Date Analyzed	08.29.91

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
02169-14	Method Blank - Solid	Client
02169-15	Matrix Spike, % Recovery (MS)	
02169-16	Matrix Spike Duplicate, % Recovery (MSD)	
02169-17	% Difference, MS/MSD	

PARAMETER	02169-14	02169-15	02169-16	02169-17
Cadmium				
Cadmium, mg/kg dw	<0.50	105 %	107 %	0.94 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---
Chromium				
Chromium, mg/kg dw	<1.0	83 %	81 %	2.4 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---
Lead				
Lead, mg/kg dw	<0.50	94 %	96 %	2.1 %
Date Analyzed	09.03.91	09.03.91	09.03.91	---
Mercury				
Mercury, mg/kg dw	<0.020	87 %	97 %	11 %
Date Analyzed	09.03.91	09.03.91	09.03.91	---
Nickel				
Nickel, mg/kg dw	<4.0	79 %	82 %	3.7 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---
Selenium				
Selenium, mg/kg dw	<1.0	102 %	100 %	2.0 %
Date Analyzed	08.30.91	08.30.91	08.30.91	---
Silver				
Silver, mg/kg dw	<1.0	87 %	87 %	0 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
02169-14	Method Blank - Solid	Client
02169-15	Matrix Spike, % Recovery (MS)	
02169-16	Matrix Spike Duplicate, % Recovery (MSD)	
02169-17	% Difference, MS/MSD	

PARAMETER	02169-14	02169-15	02169-16	02169-17
Total Cyanide				
Cyanide, Total, mg/kg dw	<1.0	86 %	81 %	6.0 %
Date Analyzed	08.28.91	08.28.91	08.28.91	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02169-18	SP-1 (Corrected/Analytical)	Client

PARAMETER	02169-18
Metals in TCLP	
Arsenic (TCLP), mg/l	<0.20
Barium (TCLP), mg/l	0.099/.084
Cadmium (TCLP), mg/l	0.046/.046
Chromium (TCLP), mg/l	<0.050
Lead (TCLP), mg/l	<0.10
Selenium (TCLP), mg/l	<0.20
Silver (TCLP), mg/l	<0.010
Mercury (TCLP), mg/l	<0.020

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02169-19	Matrix Spike-SP-2 (T1-02152)	Client

PARAMETER	02169-19
Metals in TCLP	
Arsenic (TCLP), %	99 %
Barium (TCLP), %	85 %
Cadmium (TCLP), %	100 %
Chromium (TCLP), %	90 %
Lead (TCLP), %	91 %
Selenium (TCLP), %	103 %
Silver (TCLP), %	107 %
Mercury (TCLP), %	91 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
02169-20	Extraction Fluid Blank	Client
02169-21	Detection Limit	

PARAMETER	02169-20	02169-21
Metals in TCLP		
Arsenic (TCLP), mg/l	<0.20	0.20
Barium (TCLP), mg/l	<0.050	0.050
Cadmium (TCLP), mg/l	<0.010	0.010
Chromium (TCLP), mg/l	<0.050	0.050
Lead (TCLP), mg/l	<0.10	0.10
Selenium (TCLP), mg/l	<0.20	0.20
Silver (TCLP), mg/l	<0.010	0.010
Mercury (TCLP), mg/l	<0.020	0.020

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
02169-27	Accuracy Control Limit	Client
02169-28	Precision Control Limit	

PARAMETER	02169-27	02169-28
Semivolatile Organics (8270)		
1,4-Dichlorobenzene, %	20-124 %	<27 %
N-Nitrosodi-N-Propylamine, %	41-126 %	<38 %
1,2,4-Trichlorobenzene, %	38-107 %	<23 %
Acenaphthene, %	31-137 %	<19 %
2,4-Dinitrotoluene, %	39-139 %	<47 %
Pyrene, %	35-142 %	<36 %
2-Chlorophenol, %	25-102 %	<50 %
Phenol, %	26-90 %	<35 %
4-Chloro-3-methylphenol, %	26-103 %	<33 %
Pentachlorophenol, %	17-109 %	<47 %
4-Nitrophenol, %	11-114 %	<50 %
Surrogate - 2-Fluorophenol, %	25-121 %	<30 %
Surrogate - Phenol-d5, %	24-113 %	<30 %
Surrogate - Nitrobenzene-d5, %	23-120 %	<30 %
Surrogate - 2-Fluorobiphenyl, %	30-115 %	<30 %
Surrogate - 2,4,6-Tribromophenol, %	19-122 %	<30 %
Surrogate - Terphenyl-d14, %	18-137 %	<30 %
Arsenic, %	75-125 %	<30 %
Barium, %	75-125 %	<30 %
Beryllium, %	75-125 %	<30 %
Cadmium, %	75-125 %	<30 %
Chromium, %	75-125 %	<30 %
Lead, %	75-125 %	<30 %
Mercury, %	75-125 %	<30 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
02169-27	Accuracy Control Limit	Client
02169-28	Precision Control Limit	

PARAMETER	02169-27	02169-28
Nickel, %	75-125 %	<30 %
Selenium, %	75-125 %	<30 %
Silver, %	75-125 %	<30 %
Cyanide, %	75-125 %	<30 %
Metals in TCLP		
Arsenic (TCLP), %	75-125 %	<20 %
Barium (TCLP), %	75-125 %	<20 %
Cadmium (TCLP), %	75-125 %	<20 %
Chromium (TCLP), %	75-125 %	<20 %
Lead (TCLP), %	75-125 %	<20 %
Selenium (TCLP), %	75-125 %	<20 %
Silver (TCLP), %	75-125 %	<20 %
Mercury (TCLP), %	75-125 %	<20 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
02169-29	Method of Analysis	Client

PARAMETER	02169-29				
Arsenic	3050/7060				
Barium	3050/6010				
Beryllium	3050/6010				
Cadmium	3050/6010				
Chromium	3050/6010				
Lead	3050/7421				
Mercury	7471				
Nickel	3050/6010				
Selenium	3050/7140				
Silver	3050/6010				
Cyanide	9010				
Metals in TCLP					
Arsenic (TCLP)	1311/6010				
Barium (TCLP)	1311/6010				
Cadmium (TCLP)	1311/6010				
Chromium (TCLP)	1311/6010				
Lead (TCLP)	1311/6010				
Selenium (TCLP)	1311/6010				
Silver (TCLP)	1311/6010				
Mercury (TCLP)	7470				

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Project: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
02169-30	Accuracy Control Limit	Client
02169-31	Precision Control Limit	

PARAMETER	02169-30	02169-31
Semivolatile Organics (8270)		
1,4-Dichlorobenzene, %	36-97 %	<28 %
N-Nitrosodi-N-Propylamine, %	41-116 %	<38 %
1,2,4-Trichlorobenzene, %	44-142 %	<28 %
Acenaphthene, %	46-118 %	<31 %
2,4-Dinitrotoluene, %	24-69 %	<38 %
Pyrene, %	26-127 %	<31 %
2-Chlorophenol, %	27-123 %	<40 %
Phenol, %	5-112 %	<42 %
4-Chloro-3-methylphenol, %	22-147 %	<42 %
Pentachlorophenol, %	9-103 %	<50 %
4-Nitrophenol, %	10-132 %	<50 %
Surrogate - 2-Fluorophenol, %	21-100 %	<40 %
Surrogate - Phenol-d5, %	10-94 %	<40 %
Surrogate - Nitrobenzene-d5, %	35-114 %	<40 %
Surrogate - 2-Fluorobiphenyl, %	43-116 %	<40 %
Surrogate - 2,4,6-Tribromophenol, %	10-123 %	<40 %
Surrogate - Terphenyl-d14, %	33-141 %	<40 %
Aluminum, %	75-125 %	<20 %
Antimony, %	75-125 %	<20 %
Arsenic, %	75-125 %	<20 %
Barium, %	75-125 %	<20 %
Beryllium, %	75-125 %	<20 %
Cadmium, %	75-125 %	<20 %
Calcium, %	75-125 %	<20 %

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Project: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
02169-30	Accuracy Control Limit	Client
02169-31	Precision Control Limit	

PARAMETER	02169-30	02169-31
Chromium, %	75-125 %	<20 %
Cobalt, %	75-125 %	<20 %
Copper, %	75-125 %	<20 %
Iron, %	75-125 %	<20 %
Lead, %	75-125 %	<20 %
Mercury, %	75-125 %	<20 %
Magnesium, %	75-125 %	<20 %
Manganese, %	75-125 %	<20 %
Nickel, %	75-125 %	<20 %
Potassium, %	75-125 %	<20 %
Selenium, %	75-125 %	<20 %
Silver, %	75-125 %	<20 %
Sodium, %	75-125 %	<20 %
Thallium, %	75-125 %	<20 %
Vanadium, %	75-125 %	<20 %
Zinc, %	75-125 %	<20 %
Hexavalent Chromium		
Hexavalent Chromium, %	75-125 %	<20 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
02169-32	Method of Analysis	Client

PARAMETER	02169-32
Aluminum	3010/6010
Antimony	3010/6010
Arsenic	3020/7060
Barium	3010/6010
Beryllium	3010/6010
Cadmium	3010/6010
Calcium	3010/6010
Chromium	3010/6010
Cobalt	3010/6010
Copper	3010/6010
Iron	3010/6010
Lead	3020/7421
Mercury	7470
Magnesium	3010/6010
Manganese	3010/6010
Nickel	3010/6010
Potassium	3010/6010
Selenium	3020/7740
Silver	3010/6010
Sodium	3010/6010
Thallium	3020/7841
Vanadium	3010/6010
Zinc	3010/6010
Hexavalent Chromium	
Hexavalent Chromium	7195

Method: EPA SW-846
HRS Certification #'s:81291,87279,E81005,E87052

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SEP 26 1991

Janet B Pruitt

Janet B Pruitt

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TALLAHASSEE DIVISION

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LOG NO: T1-02171

Received: 17 AUG 91

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Westinghouse Environmental Services
370 South North Lake Blvd., Suite 1028
Altamonte Springs, Florida 32701

Project: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02171-1	SP-2 (08.16.91)	Client
02171-2	SP-3 (08.16.91)	
02171-3	SP-4 (08.16.91)	
02171-4	SP-5 (08.16.91)	
02171-5	SP-6 (08.16.91)	

PARAMETER	02171-1	02171-2	02171-3	02171-4	02171-5
Arsenic					
Arsenic, mg/kg dw	<1.0	1.3	<1.0	1.6	1.6
Date Analyzed	08.29.91	08.29.91	08.29.91	08.29.91	08.29.91
Barium					
Barium, mg/kg dw	3.2	2.9	1.4	6.7	7.2
Date Analyzed	08.29.91	08.29.91	08.29.91	08.29.91	08.29.91
Cadmium					
Cadmium, mg/kg dw	1.9	20	3.2	21	25
Date Analyzed	08.29.91	08.29.91	08.29.91	08.29.91	08.29.91
Chromium					
Chromium, mg/kg dw	210	470	910	13000	13000
Date Analyzed	08.29.91	08.29.91	08.29.91	08.29.91	08.29.91
Lead					
Lead, mg/kg dw	43	29	12	54	57
Date Analyzed	08.29.91	08.29.91	08.29.91	09.03.91	09.03.91
Mercury					
Mercury, mg/kg dw	0.25	2.0	4.6	68	49
Date Analyzed	09.03.91	09.03.91	09.03.91	09.03.91	09.03.91
Nickel					
Nickel, mg/kg dw	120	2700	2100	26000	23000
Date Analyzed	08.29.91	08.29.91	08.29.91	08.29.91	08.29.91

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02171-1	SP-2 (08.16.91)	Client
02171-2	SP-3 (08.16.91)	
02171-3	SP-4 (08.16.91)	
02171-4	SP-5 (08.16.91)	
02171-5	SP-6 (08.16.91)	

PARAMETER	02171-1	02171-2	02171-3	02171-4	02171-5
Selenium					
Selenium, mg/kg dw	<1.0	<1.0	<1.0	<1.0	<1.0
Date Analyzed	08.30.91	08.30.91	08.30.91	08.30.91	08.30.91
Silver					
Silver, mg/kg dw	2.3	2.1	3.6	33	33
Date Analyzed	08.29.91	08.29.91	08.29.91	08.29.91	08.29.91
Percent Solids, %	82 %	91 %	92 %	81 %	81 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02171-6	SP-7 (08.16.91)	Client

PARAMETER	02171-6
Arsenic	
Arsenic, mg/kg dw	32
Date Analyzed	08.29.91
Barium	
Barium, mg/kg dw	7.5
Date Analyzed	08.29.91
Cadmium	
Cadmium, mg/kg dw	23
Date Analyzed	08.29.91
Chromium	
Chromium, mg/kg dw	380
Date Analyzed	08.29.91
Lead	
Lead, mg/kg dw	48
Date Analyzed	09.03.91
Mercury	
Mercury, mg/kg dw	7.0
Date Analyzed	09.04.91
Nickel	
Nickel, mg/kg dw	990
Date Analyzed	08.29.91
Selenium	
Selenium, mg/kg dw	<1.0
Date Analyzed	08.30.91

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02171-6	SP-7 (08.16.91)	Client

PARAMETER	02171-6
Silver	
Silver, mg/kg dw	3.2
Date Analyzed	08.29.91
Percent Solids, %	81 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02171-7	SbS-2B-12 (08.16.91)	Client
02171-8	SbS-2C-12 (08.16.91)	
02171-9	SbS-3B-24 (08.16.91)	
02171-10	SbS-3C-24 (08.16.91)	

PARAMETER	02171-7	02171-8	02171-9	02171-10
Chromium				
Chromium, mg/kg dw	4.6	4.4	9.5	11
Date Analyzed	08.29.91	08.29.91	08.29.91	08.29.91
Nickel				
Nickel, mg/kg dw	11	6.3	17	12
Date Analyzed	08.29.91	08.29.91	08.29.91	08.29.91
Percent Solids, %	98 %	96 %	95 %	94 %

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LOG NO: T1-02171

Received: 17 AUG 91

Mr. Joel Balmat
Westinghouse Environmental Services
370 South North Lake Blvd., Suite 1028
Altamonte Springs, Florida 32701

Project: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
02171-11	Method Blank - Solid	Client
02171-12	Matrix Spike, % Recovery (MS)	
02171-13	Matrix Spike Duplicate, % Recovery (MSD)	
02171-14	% Difference, MS/MSD	

PARAMETER	02171-11	02171-12	02171-13	02171-14
Arsenic				
Arsenic, mg/kg dw	<1.0	106 %	114 %	7.3 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---
Barium				
Barium, mg/kg dw	<1.0	87 %	87 %	0 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---
Cadmium				
Cadmium, mg/kg dw	<0.50	99 %	91 %	8.4 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---
Chromium				
Chromium, mg/kg dw	<1.0	87 %	72 %	19 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---
Lead				
Lead, mg/kg dw	<0.50	85 %	86 %	1.2 %
Date Analyzed	08.30.91	08.30.91	08.30.91	---
Mercury				
Mercury, mg/kg dw	<0.020	89 %	110 %	21 %
Date Analyzed	09.03.91	09.03.91	09.03.91	---
Nickel				
Nickel, mg/kg dw	<4.0	94 %	84 %	11 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
02171-11	Method Blank - Solid	Client
02171-12	Matrix Spike, % Recovery (MS)	
02171-13	Matrix Spike Duplicate, % Recovery (MSD)	
02171-14	% Difference, MS/MSD	

PARAMETER	02171-11	02171-12	02171-13	02171-14
Selenium				
Selenium, mg/kg dw	<1.0	102 %	100 %	2.0 %
Date Analyzed	08.30.91	08.30.91	08.30.91	---
Silver				
Silver, ug/kg dw	<1.0	91 %	83 %	9.2 %
Date Analyzed	08.29.91	08.29.91	08.29.91	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02171-15	SP-2 (Corrected/Analytical)	Client
02171-16	SP-3 (Corrected/Analytical)	
02171-17	SP-4 (Corrected/Analytical)	
02171-18	SP-5 (Corrected/Analytical)	
02171-19	SP-6 (Corrected/Analytical)	

PARAMETER	02171-15	02171-16	02171-17	02171-18	02171-19
Metals in TCLP					
Arsenic (TCLP), mg/l	<0.20	<0.20	<0.20	<0.20	<0.20
Barium (TCLP), mg/l	0.085/.072	<0.050	<0.050	<0.050	<0.050
Cadmium (TCLP), mg/l	0.041/.041	0.28/0.28	0.050/.050	0.062/.062	0.063/.063
Chromium (TCLP), mg/l	<0.050	<0.050	1.0/0.94	3.4/3.1	3.6/3.2
Lead (TCLP), mg/l	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium (TCLP), mg/l	<0.20	<0.20	<0.20	<0.20	<0.20
Silver (TCLP), mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Mercury (TCLP), mg/l	<0.020	<0.020	<0.020	<0.020	<0.020

Method SW-846-1311 -- TCLP results which are above the quantitation limit have been corrected for analytical bias per instructions in Section 8.2.5 of Method 1311 (Federal Register, June 29, 1990). The first number reported is the corrected TCLP value (used to determine if the sample is hazardous) and the second value is the uncorrected analytical result.

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SEP 26 1991

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TALLAHASSEE DIVISION

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Project: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
02171-20	SP-7 (Corrected/Analytical)	Client

PARAMETER	02171-20
Metals in TCLP	
Arsenic (TCLP), mg/l	<0.20
Barium (TCLP), mg/l	0.11/0.095
Cadmium (TCLP), mg/l	1.0/1.0
Chromium (TCLP), mg/l	<0.050
Lead (TCLP), mg/l	<0.10
Selenium (TCLP), mg/l	<0.20
Silver (TCLP), mg/l	<0.010
Mercury (TCLP), mg/l	<0.020

Method SW-846-1311 -- TCLP results which are above the quantitation limit have been corrected for analytical bias per instructions in Section 8.2.5 of Method 1311 (Federal Register, June 29, 1990). The first number reported is the corrected TCLP value (used to determine if the sample is hazardous) and the second value is the uncorrected analytical result.

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TALLAHASSEE, FLORIDA

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
02171-21	Matrix Spike - SP-2	Client

PARAMETER	02171-21
Metals in TCLP	
Arsenic (TCLP), %	99 %
Barium (TCLP), %	85 %
Cadmium (TCLP), %	100 %
Chromium (TCLP), %	90 %
Lead (TCLP), %	91 %
Selenium (TCLP), %	103 %
Silver (TCLP), %	107 %
Mercury (TCLP), %	91 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
02171-22	Extraction Fluid Blank	Client
02171-23	Detection Limit	

PARAMETER	02171-22	02171-23	
Metals in TCLP			
Arsenic (TCLP), mg/l	<0.20	0.20	
Barium (TCLP), mg/l	<0.050	0.050	
Cadmium (TCLP), mg/l	<0.010	0.010	
Chromium (TCLP), mg/l	<0.050	0.050	
Lead (TCLP), mg/l	<0.10	0.10	
Selenium (TCLP), mg/l	<0.20	0.20	
Silver (TCLP), mg/l	<0.010	0.010	
Mercury (TCLP), mg/l	<0.020	0.020	

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Project: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
02171-24	SP-8 (08.16.91)	Client

PARAMETER	02171-24
Arsenic	
Arsenic, mg/l	<0.010
Date Analyzed	08.31.91
Barium	
Barium, mg/l	<0.010
Date Analyzed	09.03.91
Cadmium	
Cadmium, mg/l	<0.0050
Date Analyzed	09.03.91
Chromium	
Chromium, mg/l	0.076
Date Analyzed	09.03.91
Lead	
Lead, mg/l	<0.0050
Date Analyzed	08.30.91
Mercury	
Mercury, mg/l	0.00029
Date Analyzed	08.30.91
Nickel	
Nickel, mg/l	0.18
Date Analyzed	09.03.91
Selenium	
Selenium, mg/l	<0.010
Date Analyzed	09.03.91

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
02171-24	SP-8 (08.16.91)	Client

PARAMETER	02171-24
Silver	
Silver, mg/l	<0.010
Date Analyzed	09.03.91

Method: EPA SW-846
HRS Certification #'s:81291,87279,E81005,E87052

Janet B. Pruitt

Janet B. Pruitt

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LOG NO: T1-2171A

Received: 06 SEP 91

Mr. Joel Balmat
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Altamonte Springs, Florida 32701

Purchase Order: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
2171A-1	SP-7 (Corrected/Analytical)	Client

PARAMETER	2171A-1
Barium (TCLP), mg/l	0.062/.061
Cadmium (TCLP), mg/l	0.28/0.27

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LOG NO: T1-2171A

Received: 06 SEP 91

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Purchase Order: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
2171A-2	Matrix Spike - SP-7	Client

PARAMETER	2171A-2
Barium (TCLP), %	99 %
Cadmium (TCLP), %	96 %

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LOG NO: T1-2171A

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Purchase Order: ORW-E159/Chemform

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
2171A-3	Extraction Fluid Blank Result	Client
2171A-4	Detection Limit	

PARAMETER	2171A-3	2171A-4
Barium (TCLP), mg/l	<0.050	0.050
Cadmium (TCLP), mg/l	<0.010	0.010

for Janet B. Pruitt